UNIVERSITY OF SOUTHERN QUEENSLAND

Training Language Teachers Online: A Study of Computer-Assisted Language Learning (CALL) Teacher Training in Indonesia

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Abstract

Despite some encouragement by the government of Indonesia and the university administrators to conduct online education, the implementation of online teacher training in an Islamic university has not been seriously addressed. There, some potential assets for the implementation of online teacher training, such as appropriate ICT hardware and positive beliefs held by all university members, have not been encouraged much. As a result the effort of online teacher training on the university has not been run optimally.

This study aimed to investigate the possible implementation of online teacher training (OTT) programs for English as a foreign language (EFL) teachers in Indonesia working with computer-assisted language learning (CALL). The study identified possible factors affecting online teacher training and explored ways of improving the existing "online" teacher training activities especially in CALL. It employed a design-based research approach which is characterized by a direct iterative intervention into an existing educational practice. The study was conducted in a teacher training college in the Islamic university providing OTT facilities. Participants in the study were student teachers/instructors, administrators, and ICT administrators. Data was collected through semi-structured interviews, observations, document reviews and online questionnaires.

During the DBR study possible factors affecting the implementation of online teacher training were identified and used as consideration when developing the online CALL teacher training (OCTT) prototypes. The OCTT prototypes were then tried out in two cycles. The results of the implementation of the OCTT prototypes resulted in three outcomes that a DBR study should bring about: generated principles, research artefact, and professional development and learning experience (Herrington, Reeves, & Oliver, 2010). The three were realized in the form of eight generated online teacher training principles. As a result of the study, an online CALL teacher training syllabus, materials and a course were produced, and the first fully online teacher professional development experience was created by the student teachers, as well as professional collaborative work was engaged in with the local instructors and other staff on the research site.

List of Abbreviations

AR	: Augmented Reality
BDK	: Balai Diklat Keagamaan (Training Centre for Religious Affairs)
CALL	: Computer-assisted Language Learning
CK	: Content Knowledge
CMC	: Computer Mediated Communication
CoP	: Community of Practice
DBL	: Discussion Board within the LMS
DBR	: Design-Based Research
DGHE	: Director General of Higher Education
eTC	: e-Training Community
GBL	: Game-Based Learning
GoI	: Government of Indonesia
ICT	: Information and Communication Technology
IOU	: Indonesian Open University
LMS	: Learning Managements Systems
MALL	: Mobile Assisted Language Learning
MoEC	: Ministry of Education and Culture
MOOC	: Massive Open Online Course
MoRA	: Ministry of Religious Affairs
OCTT	: Online CALL Teacher Training
OER	: Open Educational Resources
P4TK	: Pengembangan dan Pemberdayaan Pendidik dan Tenaga Kependidikan Bahasa (Centre for Development and Empowerment of Teachers and Education Personnel)
PBL	: Problem-Based learning
PCK	: Pedagogical Content Knowledge
PK	: Pedagogical Knowledge
SEAMOLEC	: South East Asian Ministry of Education Regional Open Learning Centre
SWOT	: Strengths, Weaknesses, Opportunities, and Threats
TCK	: Technological Content Knowledge
TCP	: Teacher Certification Program
TEFL	: Teaching English as Foreign Language
TESOL	: Teaching English to Speakers of Other Languages
TK	: Technological Knowledge
TPCK	: Technological Pedagogical Content Knowledge
TPD	: Teacher Professional Development
TPK	: Technological Pedagogical Knowledge
TTCo	: Teacher Training College
USAID	: United States Aid

Certification of Dissertation

I certify that the ideas, experimental work, results, analyses, software and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

Signature of Candidate _____ Date _____

Endorsement

A/Prof Henriette van Rensburg _____ Date _____

A/Prof Shirley O'neill _____ Date _____

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Chapter 1: Introduction

1.1 Background

Indonesia is a country consisting of 17,508 islands, and home to about 250 million people of 300 different ethnic groups ("Profiles of Indonesia," 2009). This condition makes Indonesia the biggest archipelago-based country in the world (Jepson, 2013; "World bank and environment in Indonesia," 2013). The country's geographical condition has forced the government to provide equal quality educational opportunities to the many Indonesian people who live in islands separated by seas and straits across Indonesia. Although most Indonesians are concentrated and live in the Java Islands, education treatment for them should not be different in quality from their brothers and sisters living in the other islands of Indonesia. This equality in education provision has been stated in the Indonesian law No. 20/2003 on the national education system and the constitution of the Republic of Indonesia 1945 (Kansil, 2003; *Undang-undang Republik Indonesia nomor 20 tahun 2003*, 2003).

To provide quality education, many efforts have been made by the government of Indonesia (GoI), from providing education supporting policies, and educational facilities, to human resources development, and curriculum development ("Rencana strategis kementerian pendidikan dan kebudayaan tahun 2010-2014," 2012). For human resources development, one of the GoI programs was designed in 2007 to upgrade teachers' competences through a program called Teacher Certification Program (TCP) (Rosyidi Mahsunah, Antono, Wahyuni, Ambarukmi, Wismana, Gultom, 2013; Widoyoko, 2008). The program is aimed at helping teachers to achieve the four government-required competences: pedagogical competence, professional competence, social and personal competence (Rosyidi, et al., 2013). Through the

TCP program the GoI collaborates with GoI-accredited teacher training institutions across Indonesia to conduct necessary assessment on teachers' work performance and to conduct follow up training for teachers to better achieve the above-stated four competencies (Kemendiknas, 2007a). Indeed, this program is not the only effort provided by the GoI for teacher professional development (TPD). Other, official TPD activities are also offered by the GoI through their educational partners such as *Lembaga Penjamin mutu Pendidikan* (LPMP/ Educational Quality Assurance Board), teacher training colleges (TTCo) and teacher training centres (TTC) across Indonesia.

Unlike TTCos, which are mostly focused on preparing both pre-service and in-service teachers, the TTCos in Indonesia serve as training providers for mostly the in-service teachers. These TTCos are administered by two ministries, the Ministry of Religious Affairs (MoRA) and the Ministry of Education and Culture (MoEC). Under MoRA there are 12 TTCos called *Balai Diklat keagamaan* (BDK) (Religious Training Centre) which are located throughout Indonesia. BDKs regularly provide countrywide training not only for in-service teachers working in various schools under MoRA, but also for MoRA administrative staff (Kemenag, 2013). Teachers working in schools under MoEC are trained at the *Pusat Pengembangan dan Pemberdayaan Pendidik dan Tenaga Kependidikan Bahasa* (P4TK) (Centre for Development and Empowerment of Teachers and Education Personnel). There are eleven P4TKs in Indonesia, which are mostly located on Java Island in which most governmental administrative activities are centred. Unlike the teacher training centre under MoRA which caters for various training activities for various subject teachers, the 11 P4TKs have their own training specialization to provide training for the in-service subject teachers (Kemendiknas, 2007b).

As alternative to training provided by the above three parties, in accordance with the national education system law No. 20/2003 and government ordinance no. 101/2000, teacher

education in Indonesia can also be carried out by the method of information and communication technology (ICT)-based distance training, to overcome administrative and geographical barriers. So far there have been few efforts in offering distance teacher training by adopting information technology such as the ones pioneered by Indonesia Open University, South East Asian Ministry of Education Regional Open Learning Centre (SEAMOLEC), *Pusat teknologi dan Komunikasi Pendidikan*[Centre for technology and educational communication] (Pustekkom), teacher training institutions, BDKs and P4TKs. However, few reports have been published about the implementation of the distance learning by those institutions (Belawati, 2005; Belawati & Zuhairi, 2007; Darmayanti, Dewiki, Asih, & Nurhayati, 2004; Pannen, Riyanti, & Pramuki, 2007)

In Indonesia, online teacher training is the successor of the country's distance teacher training which was initiated in 1955. At that time the training was focused on upgrading elementary school teachers' education through correspondence. Years later, at the beginning of the 1980s, the distance teacher training effort was upgraded by the use of satellite communication, and the tele-blackboard system was used to interact with other instructors or students (teachers) in all participating institutes in the eastern parts of the Indonesian archipelago. In 1981 the Indonesian Director General of Higher Education (DGHE) implemented a distance upgrading course for in-service junior high school teachers. The course was aimed at leading them to achieve the degree of Diploma II, which was at that time considered to be an acceptable qualification for teachers in junior high schools. One year after that, another distance training program was also implemented, which was meant to upgrade the teaching skills of junior university lecturers. This program was called AKTA V. Then, in 1984 an Indonesian Open University (IOU) was established (Zuhairi, Wahyono, & Suratinah, 2006). IOU has been the one institution in Indonesia that consistently promotes distance learning. Along with the advancement of ICT, distance learning is offered through

the medium of the Internet and no longer paper based like it used to be. Nowadays they also offer blended training for both pre-service and in-service teachers (Pannen et al., 2007).

Distance teacher training has always been a top priority for the World Bank (Potashnik & Capper, 1998). This is true especially for teacher training in developing countries such as Indonesia. Therefore, the GoI through its ordinance No. 101/2000 encouraged the use of ICT-based distance training for teacher professional development. The government is aware that the geographical conditions in Indonesia, which consist of sea-separated islands scattered throughout the country, may hinder teachers from upgrading their competences and from having access to professional development resources. Accordingly, ICT-based distance teacher training is seen by the GoI to be the solution for teachers living in those islands. Through the ICT-based distance training, the teachers can relatively easily access the TPD resources while saving money and energy; this also prevents the possibility of teachers losing their job position due to administrative requirements (Pannen et al., 2007; Soekartawi, Haryono, & Librero, 2012; Zuhairi et al., 2006).

Recently some efforts on ICT-based online teacher training for teacher professional development have been made (Education Development Centre, 2009; Fathoni, 2009; Pannen et al., 2007; Sari, 2012). Some of these online training programs are managed by the central government and some others by universities or by individuals. Yet, there is no data available about the exact number of online training practices in Indonesia (Sulistyo-Basuki, 2007) and not much literature is available yet that investigates the implementation of online teacher training. So far, not many reports about Indonesian online teacher training were found (Belawati, 2005; Darmayanti et al., 2004; Pannen et al., 2007; Sari, 2012).

The beginning of the online teacher professional development programs managed by the government can be traced back to early 2007 when an online teacher training facility was

established and facilitated by the SEAMOLEC and the Director General of Higher Education (DGHE) in Indonesia. The facility was originally meant to accelerate the effort of improving teaching skills of 66% of Indonesian primary school teachers who had not met the country standard. The program has been reported as successful (Pannen et al., 2007) and is recommended for the teacher professional development process for a large country like Indonesia (Education Development Center, 2009). Therefore, since then many efforts on online training have been mushrooming throughout Indonesia supported by government institutions, schools and universities across Indonesia. However, again as has been mentioned above, not much literature on the implementation of online training in Indonesia can be found.

There are several known studies (e.g., Belawati, Anggoro, Hardhono, & Darmayanti, 2002; Education Development Centre, 2009; Luschei, Dimyati, & Padmo, 2008; Sari, 2012) on online teacher training in Indonesia that can be taken as examples here. Sardjiyo and Pannen (2006, cited in Luschei, Dimyati, & Padmo, 2008) for instance, investigated the implementation of online distance learning in the IOU and found that most faculty members and participants have positive impressions of the program. They agree that in the future the program should be developed more. Furthermore, Pannen et al. (2007) report that in 2007 an online teacher training sponsored by SEAMOLEC and Indonesian DGHE called Hybrid Learning for Indonesian Teachers (HYLITE) was launched and is reported to be successful in helping teacher trainees to achieve bachelor degrees in education. In addition, the Education Development Centre (2009), a United States Aid (USAID) sponsored agency in Indonesia, recommends web-based approaches for teacher training programs in the vast archipelagic country. The latest known study on the Indonesian online teacher training context is by Sari (2012) and investigates the online TPD for teachers. She reports that participation in the TPD

is influenced by teachers' ICT experience, instructors, participation, social media-based communication modes, and a mobile device-friendly discussion portal.

Apart from online training and distance training, technology training should also be well addressed by teacher training providers. Given the fact that the GoI strongly encourages the use of technology in education, it is imperative that TTCo prepares to offer such training for teachers. Teachers need to be well informed that the use of technology assists them and their students in teaching and learning. Teachers should not be left with new technology without any prior knowledge on how to integrate such technology. Failing to do so is likely to lead them to frustration with the use of technology in education.

UNESCO (2003) recommends that for teachers to become ICT-literate in education, adequate training should be prepared for them. The training should equip teachers with knowledge on how to integrate ICT into their classroom instruction. Knowing this integration is an essential part of ICT training for teachers, since knowing ICT in itself does not guarantee that teachers know how to use it for teaching. It is also important to bear in mind that teachers should not have the belief that ICT can replace them, because ICT is just a tool and it is teachers who should have the pedagogical knowledge of how to manipulate and use it for the purpose of education (Wai-Kong et al., 2005). Therefore, teacher training that balances pedagogical content and ICT-based tools should be designed to equip teachers to be ready to integrate ICT in their teaching.

In Indonesia the government has been very enthusiastic in promoting the use of ICT in the education sectors. The issuance of government ordinance, law, and ministerial decrees has been good support for the promotion of these ICT integration efforts. The provision of inter educational institution networks such as JARDIKNAS and INHERENT are also examples of the GoI's efforts to speed up the adoption of ICT in the education sector. Many projects to

make use of the networks have also been initiated by the GoI such as *Buku Sekolah Elektronik* [electronic school books] project, *Rumah Belajar* [House of Learning] project, and *Data Pokok Pendidikan* [Education Database]. Despite these efforts however, few schools and universities in Indonesia have initiated online learning. Unfortunately, not many know that ICT training for teachers is offered in Indonesia.

Training in the use of ICT in teaching is unavoidable to achieve optimum benefit of ICT use in Education. Teachers who are the key persons in promoting the use of technology in the classroom should be trained to have good ICT literacy and competence on how to integrate the technology into the curriculum better. For that purpose proper ICT training for teachers is a must. Given the fact that ICT competence is a mandatory requirement for being certified as a teacher in Indonesia ("Undang-undang republik indonesia nomor 14 tahun 2005 tentang guru dan dosen [Indonesian teacher and lecturer law]," 2005), teacher training institutions should help them prepare for the technology challenge. In the case of teacher development in Indonesia, little training on technology has been offered, and most of the training is in the form of 'crash programs' which are usually very limited in terms of time and materials offered. Not many teacher training institutes so far have been observed to offer ICT training for teachers, especially for language teachers. Even the current national teacher certification program, which is supposed to upgrade teachers' ICT competences does not seem to adequately equip in-service teacher trainees with enough skills and knowledge on how to integrate technology into their classroom instruction (McMillan, 2010; Miao, 2011)

In language teacher education in Indonesia, ICT training for language teachers and computer-assisted language learning (CALL) training are still new. Not many teacher training institutions offer such training for teachers. It was difficult to find any information on when this CALL training started in a TTCo in Indonesia. It is also unfortunate that while ICT

competence is one of the teachers' mandatory competence required by the GoI, not all TTIs offer ICT training for their trainees. Other in-service teacher training centres managed by the Ministry of Religious Affairs (MORA) and the Ministry of National Education (MONE) also do not deliver much training on CALL, and there is no report known yet about their effectiveness (Aliyah, 2008; Fathoni, 2009). However, there is a growing number of ICT training programs for teachers that have been conducted in schools throughout the country in recent years. Such training is in response to the National Education System law mandating the GoI to conduct programs to equip teachers with ICT knowledge and skills that they can use in their teaching. Teachers teaching various subjects are encouraged to attend the training. Although there has been no report yet about the effectivenes of the training, it gives hope to language teachers in Indonesia to learn how to integrate technology into the classroom (Aliyah, 2008; Eris, 2011; Hasyim, 2012; Mario, 2012; Setiabudi, 2011; Udawewed, 2012)

From studies by Son, Robb, and Charismiadji (2011) and Cahyani and Cahyono (2013), it is identified that language teachers in Indonesia show positive attitudes toward the use of computers for language teaching and the demand for improving computer literacy and competency by teachers is high. Cahyani and Cahyono (2013) have found that many teachers in Indonesia even believe that the success of language teaching and learning nowadays is inseparable from the use of computers in the classrooms. Although this kind of belief might be debatable, the belief shows how strongly the teachers want to adopt technology, especially computers for their teaching.Unfortunately, there is limited available CALL-related training known that can support them to learn how to adopt technology for their language teaching. These circumstances should be addressed by education policy makers by providing more technology training for teachers (Aliyah, 2008; Fathoni, 2009).

In line with Cahyani and Cahyono (2013) and Son, Robb, and Charismiadji (2011) who suggest the need for CALL training, a number of studies on CALL teacher education, others (e.g. Guichon & Hauck, 2011; Hong, 2010; Kessler, 2007) also suggest that teacher training in CALL needs to be well planned and be conducted for the sake of future language education. They state that the necessity to adopt the rapid and ever-developing technology for language teaching by teachers is unavoidable, hence adequate training for them needs to be developed by teacher training providers. By providing adequate ICT training for language teachers, the problem of ICT integration into language teaching, for example in the form of teachers' anxiety and low confidence when using online tools, early attrition of students' motivation to learn using ICT, and simple technical difficulties, would be able to be properly adressed (Hubbard, 2008).

In conclusion, the discussion above shows that there is an observable disagreement between government policies on teacher education and teacher training institutions in Indonesia. An example of this is that there is still lack of intensive ICT training for teachers. Not all TTCos, which are Indonesia's main providers of teacher training, provide specific ICT training for teachers to equip them when working in the classroom. Among the country's six best state-run TTCos, the State University of Jakarta (UNJ), Indonesian University of Education, (UPI), State University of Yogyakarta (UNY), State University of Semarang (UNNES), State University of Surabaya (UNESA), and State University of Malang (UM) (Webometrics, 2014), only 3 of them are known to offer specific training on ICT in language education to their teacher trainees. Moreover, there is no report known about why there is still such kind of disagreement. This would need a further study on this disagreement, but that will be beyond the scope of this study. This study, on the other hand, tries to bridge the gap between government expectations on Indonesian teachers' ICT knowledge and skills and the reality of technology teacher training in the real TTCos' context in Indonesia. For that

purpose, this study specifically investigates and seeks ways to improve the current practice of CALL teacher training in a specific TTCo.

The results of the study will provide enlightenment to the TTCos offering ICT in education training, especially CALL teacher training, by providing theoretical and practical contributions and suggestions. It will provide principles and guidelines which could effectively support and guide the design of the online CALL teacher training, and which reflect current literature and legitimate research outcomes. A design-based research (DBR) approach model by Reeves (2006) is adapted to guide this study; further discussion about DBR can be seen in the later section of chapter 2. According to Edelson (2006) and McKenney et al. (2006), there are three features yielded from this kind of design-based research study: the design artefact, design principles, and a teacher professional development experience. In this study, the three features will be manifested in the form of online CALL teacher training materials, principles for administering the online teacher training, and an experience for online teacher professional development for the participants. The online teacher training experience should enrich student teachers' experience in online training, especially in the area of CALL, which is encouraged by the MONE. Lastly, the CALL online training design principles generated throughout the study would also be a useful reference for individuals, institutions or other Indonesian government donors when they develop online training in Indonesia in the future.

1.2 Research Aims and Questions

This project, entitled 'Training Language Teachers Online: A Study of Computer-Assisted Language Learning Teacher Training in Indonesia', is aimed at investigating the implementation of online English as a foreign language (EFL) teacher training for CALL in a teacher training institution in Indonesia. The study will identify factors affecting the online

EFL teacher training for CALL, the post training impact of the course on trainees' knowledge on CALL, and it will explore ways of improving the current online CALL teacher training activities. The study objectives will be three fold: developing design principles for online EFL teacher training in Indonesia with a focus on CALL, providing professional development experience for student teachers on site, and contributing to the development of an online CALL teacher training course in the institute.

The study attempts to answer the following research questions:

1. What are factors affecting the implementation of online CALL teacher training at a TTCo in Indonesia?
2. To what extent does the online CALL teacher training equip language teacher trainees with specific knowledge they need to integrate ICT in their language classrooms?
3. How can online CALL teacher training in Indonesia be improved in terms of training materials, activities, and the administration of the training?

To guide this study a design-based research (DBR) approach model proposed by Reeves (2006) is adapted. Further discussion about the DBR approach model can be found in section 2.4 of Chapter 2. In addition to the DBR approach, this study will also be based on a theoretical rationale as diagrammatically presented in section 2.1 and be elaborated in Chapter 2.

1.3 Terms and Definitions

The need for precision on language use in formal research is enhanced by defining key terms in the study (Creswell, 2009). Defining key terms assists readers to better understand the content of the research. Some key terms are defined in this section, and whenever possible multiple definitions are presented, a comparison to the definition used in

the study is provided. Definitions from the dictionary or articles are juxtaposed with the working definition used in the study.

The first specific terms to define are computer, technology, and information and communication technology (ICT). These terms will be used synonymously and interchangeably in this study. They are used to refer to communication technologies which allow people to communicate and share information. They can be software and hardware such as a personal computer, laptop, mobile devices, multimedia stations, and the internet. These terms appear often especially due to the nature of the study which involves the extensive use of technology products for investigating the practice of online CALL teacher training.

With regards to online CALL teacher training, Beatty (2013, p. 7) defines CALL as "any process in which a learner uses a computer (hardware or software) and, as a result, improves his or her language". This definition is adhered to throughout the study. The online CALL teacher training, then, is web-based training for both pre-service teacher and in-service teachers with a focus on CALL. Although it is labelled as online and most activities are carried out online, there are still opportunities for face to face meeting between teachers and students on three occasions: at the beginning, middle and end of the semester. These offline activities are simply to meet the requirements of the institution where this study was conducted.

With regards to pre-service and in-service teachers, OED (2013) defines the word pre-service as "relating to the period before a person takes a job that requires training". In addition, Uushimaki (2009, p. 3) describes a pre-service teacher as "a person who is studying to become a teacher". In this study the pre-service teachers are student teachers at a teacher training college learning to become professional teachers at formal (officially government certified) educational institutions. They have not yet been assigned a specific teaching

workload formally but may have been experiencing some teaching practice in informal sessions and/or have been observing teaching practices. Informal sessions here means private courses and private tutoring. In-service teachers, on the other hand, are teachers who have been formally assigned a teaching workload at formal educational institutions. These in-service teachers come to study in the teacher training college to upgrade their qualification to meet the GoI standards. Both pre-service and in-service teachers involved in this study are English teacher education department students of a TTCo in Indonesia. They are either in the 6th semester or 8th semester of the 8-semester program leading to a bachelor's degree in teaching English as foreign language (TEFL).

The Institute is a higher education institution in Indonesia where this study took place. While during the course of the study it was converted into a university by the GoI, the term institute is still retained in this study to refer to the same place where the data collection and implementation of the study took place.

1.4 Structure of the dissertation

The dissertation is organized into 7 chapters. This first chapter introduces the study by providing the background of the study. It also discusses the research aims and research questions. Some terms and their definition are also presented in this Chapter 1.

Chapter 2 includes a synthesis of the literature that informs the study. The chapter consists of 4 main sections. This chapter first presents the theoretical diagram of the study to help readers in understanding the flow of thought of the dissertation. It is then discussed why the choice of teacher training online would be a feasible alternative for delivering CALL teacher training on the site where the research was conducted. In the third section, some literature related to CALL teacher training is reviewed, to show how CALL teacher education has been conducted in various parts of the world and to gain information regarding aspects needed to develop a CALL course. Then, in the fourth section, since the study mostly deals

with technology integration in education, a discussion on specific research design which is widely suggested for inquiry in the area, namely design-based research, is presented.

Chapter 3 details the research approach and the research design employed in this study. It includes the discussion of the study context and then the participants in the study. It also explains the study phases as well as the two phases of the data analysis method. The last part of this chapter includes a discussion about validity in the study and ways of enhancing the validity.

In chapter 4 findings of the study are expounded. The results of interviews, online surveys, document reviews as well as direct observation are presented. In addition, other research findings based on online discussion archives are also presented.

Chapter 5 specifically focuses on the intervention designed to be implemented in the study. The intervention design, based on the findings presented in chapter 4, is detailed in this chapter.

Chapter 6 focuses on the discussion of the findings and the intervention process. Discussion in this chapter directly addresses the research questions. Also, links to other literature are drawn wherever and whenever possible. There is also a discussion on another research outcome yielded from this study at the end of Chapter 6.

Chapter 7 is the final chapter of the dissertation. It concludes the dissertation and highlights the contribution made by the study. Moreover, limitations of the study and suggestions for future studies are described in this chapter.

Chapter 2: Literature Review

In this chapter, a review of related literature that formulates the theoretical foundation of the study will be presented. There will be four main sections in this chapter. Section 2.1 shows diagrammatically how the theories reviewed in this chapter are interconnected, to assist readers in understanding the dissertation. Then, In Section 2.2 a review of literature on training teachers online is conducted to show why the choice of teacher training online would be feasible for delivering CALL teacher training. In Section 2.3, the review will be on literature related to CALL teacher education. The purpose of Section 2.3 is to show how CALL teacher education has been conducted in various parts of the world. This section is also aimed at gaining information regarding aspects needed to develop the CALL course. Since this study of OCTT mostly focuses on the use of technology in education, in Section 2.4 a review of the specific research design, which is often suggested for the inquiry in the area of technology integration in education, namely DBR, is presented.

2.1 The Approach of the Study

Figure 2.1 shows how the study is influenced by relevant theories and literature. In the diagram in figure 2.1 it can be seen that the DBR study conducted in the current CALL teacher training site is informed by a number of theories to finally produce design principles, design artefacts, and societal output of the study. These three research outputs are to contribute to the effort of finding better alternatives for current CALL teacher education practice in the research site.

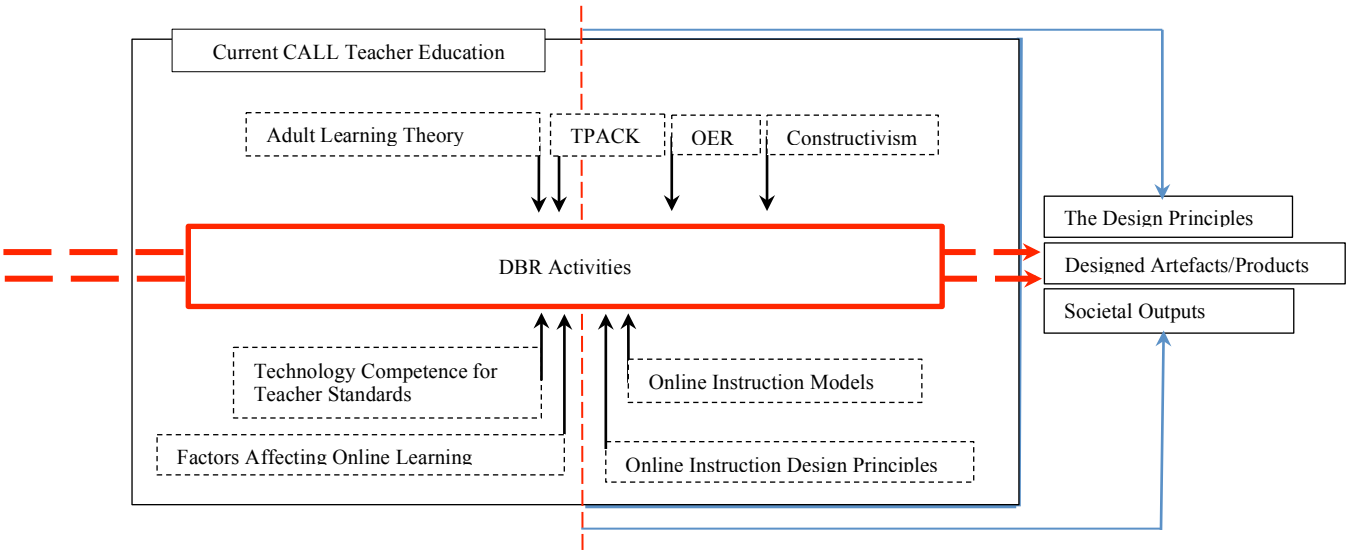

Figure 2.1 Theoretical diagram of the study

The theories adopted in the study are used for a number of different purposes as outlined in Table 2.1

Table 2. 1 *The Theories/Literature Reviewed and Purposes of the Review*

Theories/Literature	Purposes
Training teachers online	To assist in understanding how online training mode could be feasible for educating CALL teachers. The literature review is also aimed at mapping the known/has-been-investigated factors affecting online learning which later are used as a reference to identify and map potential problems on the research site.
Technology competence for teachers standards	To assist in understanding the scope of CALL teacher education related to technology and pedagogy.
Constructivism in online learning	To assist in understanding how an instruction should be developed based on constructivist theories.
Adult learning theory	To assist in understanding how an instruction for adults should be developed. This information is necessary to underpin the development of a CALL teacher course in which the participants are adults.
Online instructional models	To inform the decision of a suitable model to adapt in the online CALL teacher course development.
Online instruction design principles	To inform the design of CALL teacher courses regarding what should be considered during the development and implementation of the course.
The Technological, Pedagogical, Content Knowledge (TPACK)	To help map and balance the contents of the online CALL teacher course, especially in terms of the knowledge and skills that should be learned by the students.
Open Educational Resources (OER)	To understand the wealth of potentials benefits of OER for use in a CALL teachers course.

2.2 Training Teachers Online

Affordances of online technology for various aspects of life including for teacher training have been of interest to researchers in recent years. Delfino and Persico (2007) investigated the implementation of online teacher training and compared it with the implementation of other modes of teacher training, while Wang, Chen, and Levy (2010) have specifically looked at the use of online technology for supporting online teachers. Jung (2005) studied the cost effectiveness of online teacher training. Rienties, Lygo-Baker, Brouwer and Townsend (2011), who studied the effect of online TPD on teachers' belief in the use of ICT for teaching, found that teachers in their study integrated ICT more in their teaching practice after completing the online TPD. Many more studies focus on other aspects such as motivation, advantages and disadvantages, and other factors affecting online training. This section will focus on three issues, the advantages and disadvantages of online courses, whether shifting to online teacher training is worth doing, and factors that may affect the implementation of online teacher training.

Gaining knowledge of teachers/course developers is necessary to guide the development of online teacher training. By knowing the advantages and disadvantages of online courses for example, an awareness of the benefits that can be obtained from doing an online course, as well as what challenges might need to be faced during the online course sessions, can be better understood. For teachers, knowing the advantages and disadvantages of online courses will prepare them to better anticipate the potentials of online courses that they can explore for the sake of their delivery of quality teaching and to anticipate any hindrance that may prevent them from delivering lessons well. For course developers, knowing information about advantages and disadvantages will equip them with relevant knowledge to develop better courses because they will learn what needs to be included in the

content, and what strategies of delivery and assessment need to be designed in order to minimize the disadvantages and optimize the advantages of the online course. Also, before deciding to shift to online teacher training, it is necessary to learn from others who have experienced delivering online teacher training and see what they did with their online training. Then, it is also important to be aware of factors that may bring about success to online teacher training by learning from others who have investigated the factors affecting online teacher training.

2.2.1 Advantages and disadvantages of online courses

Online training is ubiquitous nowadays (Nunan, 2012; Watson, 2014). It happens almost in all areas of professional development including in the area of teacher professional development. In a country like Indonesia where people live in various islands separated by sea and time zones, online teacher training is highly recommended (Education Development Center, 2009; Mendikbud, 2012). However, before implementing the online mode for teacher training, it is important for teachers/course developers to learn how such online teacher training would possibly provide advantages or disadvantages to the trainees or students. Knowing those advantages or disadvantages would guide them to understand how an online course should be developed.

Advantages

Online courses offer flexibility for both teachers and students in terms of time and place (Appana, 2008; Cartwright, 2007; Clark-Ibáñez & Scott, 2008; Nunan, 2012; Watson, 2014; Yucel, 2006). Online courses offer teachers opportunities to explore new ways in teaching such as delivering materials in various formats and modes of communication. Materials can be in the form of text, audio, video, and animation (McGreal & Elliott, 2008).

Modes of communication can be in the form of threaded text-based discussions and/or web-based audio-video conferences. Teaching activities in online courses can be implemented by presenting information, facilitating discussion, and guiding exploration of webliographies (Feldman et al., n.d.). Through online courses, teachers can easily revise and update their course materials immediately online (Appana, 2008). Once they have updated the materials online, students can easily access them a few seconds later. Apart from the ease of revising and updating materials, teachers can also for example immediately re-evaluate their course materials after considering students' feedback on their content, activities, and materials organization (Ko & Rossen, 2010). Also, through online courses, teachers can relatively easily evaluate their own performance and their students' because of their activities being recorded in the online course systems (Appana, 2008).

For most learners, online courses may mean that they can study anytime anywhere (Appana, 2008; Cartwright, 2007; Shin & Lee, 2009; Yucel, 2006). This flexibility of online learning allows students more time to do reflection (Brindley, Blaschke, & Walti, 2009). Thus, they have more time to take notes and comprehend whatever they are learning from the online resources (Brindley et al., 2009; Ko & Rossen, 2010). They can work on whatever content and in whatever course they prefer. Accordingly, learning does not always happen in linear ways (Ko & Rossen, 2010). In an online learning environment learners can always refer back to whatever content they are not clear on and then discuss it with others online to get support and help. Others may be conditioned to share and contribute knowledge. According to Salmon (2013) through this kind of interactive exchange, learning is socially constructed.

Online courses are seen to be time and cost efficient (Brindley et al., 2009; Mbarek, 2013; Yucel, 2006). Although it is widely understood that the initial set up costs for online courses can be expensive, in the long run the operational costs are relatively low compared to

the costs of administering offline courses that need dedicated space, time, and teaching equipment which often are not cheap (Brindley et al., 2009). In an online course environment, cost efficiencies are achieved through optimizing the use of Internet technology for delivering electronic teaching and learning materials, organizing face-to-face meetings via computer mediated communication (CMC) tools, facilitating engaging discussions with students and collecting and giving feedback to students' work (Ko & Rossen, 2010). Thus, teaching and learning can occur anytime and anywhere as long as there is a connection to the Internet. Students and teachers no longer need to leave their place of comfort to study. As a result, traveling for study and teaching is no longer necessary and no expenses for travel are necessary (Clark-Ibáñez & Scott, 2008; Mbarek & Zaddem, 2013; Yucel, 2006).

In terms of content and learning activities, online courses may offer rich content and learning experiences. Salmon (2013) and Yucel (2006) state that most of the online course content and activities are filed in the servers; thus they can be accessed to be recycled, re-used, and reviewed for the sake of future course improvement. The learning activities are also characterized by rich learning experiences facilitating students to learn other required skills such as reading, writing, collaborative work and computer skills (Feldman et al., n.d.). Apart from that, online learning allows students ample time for self-reflection, questioning, synthesizing information, and having personalized guidance as well as access to global resources, while the development of their critical thinking skills is much facilitated through online exchanges (Appana, 2008; Brindley, 2009). Also, the ideal educators' ever-expected learner-centred learning process occurs most of the time in online courses. Students work amongst themselves to study, research particular topics, collaborate with online peers, seek help, and eventually mutually create knowledge or meaning (Brindley et al., 2009). In this type of learning process, students' learning activities can be fine-tuned to suit their various

learning styles so that eventually more active and intense participation would be stimulated (Clark-Ibáñez & Scott, 2008).

In short, all the advantages of online courses have been attracting more and more teachers, students and institutions to incorporate online courses (Feldman et al., n.d.). Docebo (2014) reports that statistics show that up until now the USA has been the leading market in the online course industries, followed by Western Europe. However, use in Asia is upcoming and is predicted to shift the position of Western Europe to become second after the USA by the end of 2016. Thus, the trend of moving towards online courses is likely to keep growing especially with the exponential global increase of ICT use (Sanou, 2014).

Disadvantages

Referring to disadvantages of online courses or online learning is probably no longer relevant in this ICT era. Whether people like it or not, online courses are offered and will be offered as long as ICT is used in people's daily life. However, to minimize the downside of the online courses, it is still important to know the disadvantages of online courses in order to figure out better ways to improve their qualities. Some disadvantages in the literature are discussed below, based on key aspects such as teachers, students, administrators, and course content and activities.

Keengwe and Kidd (2010) recognize that, despite the above-mentioned advantages, online courses are often seen as not easy to be implemented. This is because in offering online courses, teachers cannot just copy and paste their face-to-face course content directly into the online course system. Instead, they need to think of how to deliver their course content in pedagogically sound and technologically rich online activities to support their students' online learning experiences. Moreover, what makes online courses difficult to implement is their labour intensiveness on the part of teachers (Clark-Ibáñez & Scott, 2008;

Feldman et al., n.d.; Keengwe & Kidd, 2010; Ko & Rossen, 2010; Nunan, 2012). This means that teachers will have more workload because they have to design, implement, evaluate and give feedback on students' work. In an online environment all this work involves intensive use of technology, which often takes significant time for doing things such as uploading content during preparation or implementation of the online courses, evaluating digitally submitted assignments one by one, as well as providing written feedback, responding to individual questions in writing, dealing with technical problems etc. Though communication with students can be synchronously or asynchronously done using voice, video or text, the procedure taken to conduct such communication in online courses still requires a significant amount of time allocation for teachers.

Another issue of concern to teachers is that teaching online may bring about a 'lonely' feeling for them due to their inability to meet face-to-face with others (Watson, 2014). Such feelings may be caused by lack of physical interaction or of communication without facial expression and gestures (Salmon, 2013). Besides, the need to adapt to the technology-rich tools that are used for teaching, such as the learning management systems (LMS), is another distressing challenge teachers have to face. They need to be familiar with LMS features because they have to optimize the use of the features for providing support and feedback to their online students in a timely manner as well as to make use of the system effectively and efficiently (Feldman et al., n.d.; Ko & Rossen, 2010).

From the point of view of online learners, online learning is often seen as time consuming (Appana, 2008). Learners have to learn not only the content but also the technology and other online learning skills such as communicating and collaborating online. Learning those skills takes time because learners have to do it on their own by reading, watching video tutorials, or subscribing to discussion boards or online forums. Learning via online forums can sometimes even take longer because they cannot instantly get answers

when they have problems. They still have to wait for answers from others, delivered via asynchronous communication tools (e.g. bulletin boards, social media, etc.). If they do not get answers there, they need to turn to search engines and search for the answers to their problems online themselves, which is another time consuming process even if it is effective for their self-professional development practices. Consequently, such activities may cause learners frustration in the beginning of the online course especially if they have a lack of training in online learning skills and technology (Watson, 2014).

Regarding the online courses' content and activities, some studies (e.g. Cartwright, 2007; Clark-Ibáñez & Scott, 2008; Watson, 2014) have suggested that online courses offer little hands-on experiences, are technology-dependent, and tend to overload due to the inability of the course designer to select and manage information and activities to be presented in an appropriate manner. In addition, the prepared content and activities require institutions, teachers, and students to provide usable and across-device compatible technology which may be expensive. Although the provision of such compatible technology can be problematic for online courses, most of the time this can be solved in the beginning of the online courses with the help of teachers in collaboration with students, parents, and institutions. Otherwise, there would be no online courses offered. One more disadvantage related to online course content and activities that needs to be well addressed is the time zone issue, which is likely to cause problems for some learners living in different parts of the world. Setting up deadlines, synchronous video-based discussions, and webinars can be troublesome if the time zone issue is not properly considered (Appana, 2008).

Despite all the above-mentioned disadvantages of online courses, the advantages seem to be much more attractive, since more and more people depend on the Internet and more institutions offer online courses (Docebo, 2014). People want to be connected and do many activities online such as shopping, socializing, seeking help, and learning. People's

interest in online learning has been growing in recent years because more people and businesses believe that continuous education corresponds with a better career and a better life in the future (Docebo, 2014). As a result, online courses are gaining more and more popularity (Landry, 2014).

2.2.2 Shifting teacher training to online mode

There are reasons why moving teacher training to an online mode is worth implementing. Misra (2014) argues that online teacher training is a good fit to address current teacher shortages problems in developing countries. Through online teacher training, adequate support to teachers, required to teach various demanding life skills, could be given without the need for the teachers to leave their current positions. Teachers can study anytime and anywhere they prefer (Chen, Chen, & Tsai, 2009). Orleans (2010) suggests that online teacher education has solved the problem of regional diversity in terms of access, cost, and time constraints. Many Asian countries, such as Malaysia, Bhutan, The Philippines, Bangladesh, Indonesia, Mongolia, Nepal, Thailand and Vietnam have adopted online teacher education to solve problems of teacher professional development. In this section, there will be a brief description of some teacher training programs conducted online in different parts of the world. Learning from their experiences would be useful to shed some light on the issues on the implementation of online teacher training and why an online mode may also be worth implementing in the Indonesian teacher training context.

Orleans (2010) conducted an experiment of delivering teacher training online. The participants were science teachers in The Philippines with no science background. The experimental training results showed that online training is very promising in improving teachers' knowledge-based-competence, if managed and designed appropriately. It means that the training should be designed based on certain considerations such as the principles of

adult learning, the quality of online materials, student-catered activities etc. Nevertheless, the online teacher training did not seem to improve the skills-based competence of those science teachers due to a lack of hands-on practices such as teaching practices.

Sales, Al-Barwani and Miske (2008) reported the outcomes of a joint project between the US government and the Oman government. The project was to develop online teacher training activities in the Sultanate of Oman and had three aims. The first was to enable the Oman Ministry of Education to pilot Oman online teacher training involving secondary school teachers. The second was to develop the capacity of staff in the Oman Ministry of Education to design, develop, and implement online learning courses. The third was to provide online learning tools for the Oman online teacher training to ensure its viability in the future. The aims of the projects were reported as attained although with some room for improvement.

Through the project the Oman Ministry of Education was able to deliver an online teacher training activity that was aimed at motivating teachers to engage in online training, motivating teachers to implement the active teaching and learning, and to improve students' learning outcomes. The teachers who teach various subjects were reported as participating in the online training although not all of them did the online training well because of some challenges they faced. Those challenges included Internet connectivity problems, unfamiliarity with computers and online training skills, and a flaw in the online training tools used, especially the tool used for the registration process. The training was found to gain positive responses from the majority of teachers and students. The students of those participating teachers were also reported as having experienced active learning facilitated by their teachers and they mentioned that they enjoyed active learning methods.

The second outcome of the project was related to capacity building among the Ministry of Education staff. This outcome was manifested in the form of a developed online

teacher training course that they designed, implemented and managed themselves. Finally, through the implementation of the online teacher training project in the country, the system and tools for future online teacher training courses were in place and ready for use for other future online training courses for other Omani teachers.

Delfino and Persico (2007) argue that in order for future teachers to integrate educational technology in their classroom practice, they should be trained using the technology and methods they are supposed to use when teaching in real classrooms. In a five year study on their own teacher training course, Delfino and Persico tried out various different instructional techniques to teach an educational technology course to pre-service teachers. The techniques they used ranged from face-to-face teaching, blended and entirely online teaching. From the study of those different modes of teacher training delivery, they conclude that an investment in online teacher training is very important to make. They emphasize that hands-on experience aspects of the technology used for teacher training is very important for the student teachers, especially experiences involving the use of the Internet. They suggest that teachers' familiarity with Internet use would be useful for their future professional development. They also suggest that, through Internet-based training, pre-service teachers are introduced to the concept of online learning communities which would be useful for them to participate in, in the form of future communities of practice, which they believe would be one of the most promising media for teacher professional development in the future.

Wijakkanalan, Wijakkanalan and Suwannoi (2013) reported an online teacher upgrading initiative in Thailand. The initiative was in the form of a teacher qualification upgrading project through online training called UTQ Online, implemented during 2010 and 2011. Within those two years, about 720,923 educational personnel consisting of teachers, school administrators, educational executives, and supervisors from all over the country were

trained to upgrade their qualifications, develop their job relevant skills, and direct their attitudes towards the use of ICT in their work and for their self-directed learning. Thailand government investment in this online training program was proven to be cost effective and time efficient. Participants reported that they were satisfied with the online training, and were willing to change their attitudes towards ICT use in their work. The online training had an impact on curriculum development, courseware development, and the system of training management in the country.

ICT has also affected the delivery of teacher training in China (Robinson, 2008; Shi & Englert, 2008; Yan, 2009). Since the beginning of the twentieth century, the Chinese government has made an effort to integrate ICT in teacher training programs but there was little success. However, as time passes and more experiences with ICT integration in teacher training have occurred, the Chinese government has gradually and eventually been successful in upgrading the skills and knowledge of millions of its teachers in little time through online training. So far the e-training Community (eTC) initiative has been one of its successful online teacher training projects. The project, which was initiated in 2005, was the result of close collaboration between the Chinese government, universities, and teacher training agencies. Using the potential of networked technology, they managed to address the challenge of massive and routine teacher training. Through the project they were able to save on the cost of training, time of training deliveries, as well as potential conflicts between teachers' working schedules and the training schedule (Yan, 2009).

On the other hand, there was also a case reported of online teacher training in China being ineffective (Chen, Chen, & Tsai, 2009). It was discovered that during the synchronous online discussion sessions, the participating teachers were just posting social messages and most of those messages did not involve any cognitive and metacognitive skills. Therefore, some participants claimed that the online synchronous discussion was perceived as

ineffective for them. Later, it was found that such problem in online teacher discussion forums was identified as caused by the lack of self-regulated skills of the participants and it was also likely to be caused by the ineffective role of the online moderator.

Other initiatives of online teacher development programs are offered for free such as in Coursera, Udacity and EdEx. Many other online teacher training course providers can also be easily found on the Internet by using a simple Google search such as 'related: *www.coursera.org'*. Many massive open online courses (MOOCs) for teacher training can be easily found and subscribed to. The MOOC providers usually offer various courses with a wide array of subjects for free. Interestingly, "such courses can be chosen in the *a la carte manner"* (Mallon, 2013, p. 46) with which people can easily add to their study with whichever course they like and need. This '*a la carte*' feature adds more to the learning flexibility of online teacher professional development courses and thus makes teacher education become more appealing to the teachers in need of learning.

In the spirit of sustaining continuing teacher professional development as emphasized by the OECD (2009), the MOOC initiative in teacher education areas today is worth considering because the MOOC initiative will provide teachers with reliable access to resources for their professional development whenever they expect to have a need for such access to resources during their career. Joining the MOOC helps them to keep their performance up to the required standards and their knowledge and skills up-to-date to support their teaching tasks. The OECD have observed that what teachers used to get during their teacher education in the past will not be sufficient to equip them to face future educational challenges they may encounter. Accordingly, they need to keep updating their knowledge and skills themselves. Thus, the existence of online teacher education initiatives such as MOOCs is a great help for ensuring that teachers can get help to support their performance.

In addition to MOOCs, other initiatives that contribute to the preference of online teacher training is the availability of free digital content, materials, and tools developed by various communities on the Internet. Such digital resources, usually published under a creative common (CC) license, are known as open educational resources (OERs). The OER has attracted many individuals and educational establishments who use their teaching practices or their teacher professional development programs. Misra (2014) states that they use OER because the OER offers many potential relevant and up-to-date resources for use especially in online education. Further, he suggests that the OER-based online teacher training should be promoted due to many facts suggesting that this type of training is able to facilitate mass training to teachers across cultures especially in developing countries. Given the development of ICT in developing countries are promising as per ITU report (Sanou, 2014), the idea of such OER-supported online teacher training should be feasible in the very near future or even today. Therefore, any possible efforts should be made to make the enterprise come true. Discussions on the OER and how it would be useful for online teacher training will be given at the end of Section 2.3.2

Considering the current development in technology and teacher educational needs, offering teacher training in online modes is worth doing. This goes beyond Shin and Lee's (2009, p. 33) critique of today's technology adoption in education as "uncharacteristically adapting technology without careful consideration". Online teacher training is more about answering the needs of those who cannot easily leave their posts due to many reasons such as time and geographical constraints. In addition, online teacher training is also conducted and offered for other reasons such as the ever increasing demand for teachers to have good ICT literacy (Jung, 2005b; OECD, 2009), cost effectiveness of the online teacher training (Jung, 2005a), and all the aforementioned positive potentials of online teacher training. All these

reasons make the online teacher training quite a solution for problems of delivery in future teacher education.

Adding more to those motivating reasons, it is understood that, through online training, teachers would benefit from directly experiencing hands-on ICT-integrated teaching-learning activities and from easy access to updated community-driven digital resources (such as OERs). Such benefits would certainly help them improve their instruction as well as help them familiarize themselves with ICT use in the classroom. Such online training experiences would lead them to easily address the current phenomenon described by Geser and Hornung-Prahauser (2010) as an "increasing gap between the current use of technologies for teaching and learning in schools and the daily experiences that pupils have with technologies outside of school" (p. 4). As we are increasingly aware of by now, pupils live with technology around them, and they live with the rapidly developed technology products that many schools cannot immediately afford to provide. In this context, students often learn and master the technology before their teachers do. Through online teacher training, teachers are facilitated to update their knowledge anytime and anywhere and to keep up with the students' needs to live with updated technology.

2.2.3 Factors affecting online teacher training

A number of studies on factors affecting the implementation of online teaching and learning have been reported and published (e.g. Anderson, 2008; Bhati, Mercer, Rankin, & Thomas, 2010; Folinsbee, 2008; Hoffman, 2004; Keengwe & Kidd, 2010; Koontz, Li, & Compora, 2006; Muilenburg & Berge, 2005; Park & Choi, 2009; Sun, Tsai, Finger, Chen, & Yeh, 2008). Table 2.2 summarises the factors pointed out by those researchers.

Table 2.2 *Factors Affecting Online Teaching and Learning*

Author	Students	Instructors	Course	Technology	Support
Anderson (2007)	Academic confidence Attitudes on e-learning	Technological confidence New learning style confidence Motivation and commitment Qualification and competence Dedicated Time	Teaching and learning activities Localization of content	Flexibility of learning Access	Support for students from faculties, institutes, administration, and technical units
Banegas & Manzur (2014)	Personal time management	Instructors online and pedagogical competence Tutor's profile	Deadlines Content and activities	A/synchronicity LMS features	Sense of community
Park & Choi (2009)	Learner characteristics Personal problems (family issues, workload, or financial) Motivation		Time constraints Course design strategies Relevance	Technological usability	Organizational Support Family Support
Gunn (2011)					Institutional support
Bolliger & Wasilik (2009)	Teachers' satisfaction				
Mbarek & Zaddem (2013)	Confidence with ICT	Social presence	Collaborative activity	E-learning platform design	Need for social-communication
Hoffman (2004)	Adequate participation	Active participation	Usable technology	Providing opportunity to interact and collaborate	Interaction among learners and instructors
Muilenburg & Berge (2005)	Motivation Technical skills Academic skills	Instructor issues Administrator Issues	Interactivity	Technical problems Access to internet Cost	Social interaction Support for studies Length of time for support
Keengwe & Kidd (2010)	Learners' procrastination	Lack of technical expertise Lack of release time to design and develop online course		Inadequate hardware and software Slow internet connection	Faculty involvement Insufficient orientation
Bhati et al. (2010)	Difficulty in learning to use ICT Knowledge of how to use technology Belief that technology	Knowledge of how to use technology Belief that technology enhances learning		Reliability of the technology used	Institutional support for using the technology

Author	Students	Instructors	Course	Technology	Support
	enhances learning				
Koontz et al. (2006)			Instructional design model Instructional Materials Assessment		
Sun et al. (2008)	Attitude towards computers Learners' anxiety Learners' internet self-efficacy	Instructor response timelines Instructors' attitudes toward e-learning	Course flexibility Course quality	Internet Quality Technology design (perceived usefulness and perceived ease of use)	

The table shows five categories of factors affecting the successful implementation of online teaching and learning. The categories are students, instructors, course, technology, and support. In each category there is a number of factors that will be discussed below.

Students

In the student category, there is a number factors identified as affecting the process of online learning. Students' confidence in the use of technology and how they use technology for learning is the dominant one. Difficulties in using technology often affect their attitudes towards online learning and thus affect them in learning effectively in the online environment (Anderson, 2008; Bhati et al., 2010; Mbarek & Zaddem, 2013; Muilenberg & Berge, 2005; Sun et al., 2008). Another affecting factor is poor study skills such as bad personal time management and tendency for procrastination which are experienced by most students, especially in the beginning of their online courses (Banegas & Manzur, 2014; Keengwe & Kidd, 2010). Learners' characteristics such as their gender, age and educational level are also important affecting factors in the process of online learning. The learners' characteristics can even be used as predictors for learners' persistence in learning online, but they do not significantly affect learners' online learning success (Park & Choi, 2009). Instead, what learners find more crucial factors to online learning success are domestic issues such as

family, personal, and financial problems. Another crucial factor, according to Muilenberg and Berge (2005) is motivation. Online learning designers, therefore, should attempt to best address the motivational issue in order to foster learners to actively participate in online learning activities. Hoffman (2004) and Keller, Hrastinski, and Carlsson (2007) identify that learners' active participation is one of the contributing factors to students' success in the online learning process.

Instructors

The second category is instructors. In this category the dominant affecting factor is associated with what Koehler and Mishra (2009) term technological pedagogical content knowledge (TPACK). This factor includes teachers' knowledge, which is not only about technology but also about how technology can be used to assist pedagogical activities. The technological and pedagogical knowledge is seen to be important to drive students' motivation to keep learning online. With such knowledge teachers will be equipped to conduct online teaching using technology creatively through various learning activities that help in maintaining students' interest in online learning. As a result, students' motivation to stay online to learn can be grown (Park & Choi, 2009). Tutors' profiles are also seen to be an important factor to attract learners to learn online. Banegas and Manzur (2014) find that learners feel much more secure if they know who their teachers are. Teachers' online presence is also important to attract stronger student involvement in the online learning environment. It is suggested that instructors actively participate in online activities by being present socially or cognitively to help learners while learning or to stimulate their participation in online activities (Hoffman, 2004; Mbarek & Zaddem, 2013; Muilenberg & Berge, 2005). To accommodate all those instructor-related factors successfully, instructors should specifically dedicate their time to designing, developing, implementing, and

evaluating the online course (Bhati et al., 2010; Keengwe & Kidd, 2010). Although such dedication can be hard to achieve, it does not necessarily have to be if instructors have a strong belief in the advantages of online learning that students could benefit from (Bhati et al., 2010).

Courses

The third category is courses. In this category some factors identified are course design, content and activities and the time allocated for students to learn online. Park and Choi (2009) assert that students dropping out may be prevented from doing so if an online course is designed properly. In order to design a good course, learners' preferred content and engaging activities should be accommodated because they are likely to give learners learning satisfaction. If they are satisfied, the possibility for students dropping out from the online course can be minimized. Furthermore, Banegas and Manzur (2014) report that synchronicity of the online activities is a determining factor for engaging students in an online session. They say that by doing synchronous communication activities, students would not feel alone when they learn. They would feel that they are among a community and thus feel secure because they can get easy access to peer support when learning. Banegas and Mazur observe that the need for such feeling in a community is obvious when their students eagerly set up an online group in social media like Facebook to keep on communicating even after official online sessions. To develop the feeling of community, Mbarek and Zaddem (2013) recommend that a collaborative work space or shared learning space should be provided in the course learning management system.

Adding to the course category, Anderson (2008) suggests that content localization is important to be realized in online courses in order to draw students' interest in learning. By having localized materials and activities, online instructors would be likely to satisfy

students' interest as well as to create more relevant materials for them (Park & Choi, 2009). More contributing factors are flexibility and the time allocation provided for students to work in the online course. As emphasized by Banegas and Manzur (2014) and Park and Choi (2009), flexibility is one reason why people learn online. Tasks and materials, therefore, should be easily accessed and do-able at flexible times and in flexible spaces. Also, the deadline set for the tasks should be carefully adjusted according to students' profiles. Unreasonably tight deadlines should be avoided because they would demotivate students to learn and eventually cause failure in their online learning.

Technology

The fourth category is technology which comprises factors such as learning management systems (LMSs) (Anderson, 2008; Banegas & Manzur, 2014; Mbarek & Zaddem, 2013; Park & Choi, 2009), accessibility and flexibility of the technology. Mbarek and Zaddem (2013) underline that the LMS features may affect students' perceptions of e-learning and thus affects their use of the LMS, which eventually affects their learning outcomes. The LMS, therefore, should be carefully chosen, be reliable and easily accessible to students to allow the online learning process to take place without hassle, so that the anytime and anywhere learning process can be carried out by students comfortably (Anderson, 2008). For that purpose, online learning designers should carefully consider hardware and software compatibility, quality, and issues. Failing to do so will lead students to frustration caused by technical issues in accessing the online course. If that happens, students would be likely to stop responding to online activities. To choose a learning management system (LMS), it is important to select one that offers features by which instructors can assign a shared space for students to collaborate and to interact amongst themselves (Hoffman, 2004). Such features should accommodate either asynchronous or synchronous

communication via tools like discussion boards, video conferences, and wikis. Essentially, the technology should be guaranteed to be reliable enough to make all the online learning expectations happen (Bhati et al., 2010).

Support

The fifth category is Support. Many studies (e.g. Banegas & Manzur, 2014; Hoffman, 2004; Keengwe & Kidd, 2010; Mbarek & Zaddem, 2013; Muilenberg & Berge, 2005) show that online teaching and learning participants need to be always connected with one another in order to feel part of a community in the online environment. The participants want what they experience in real life to happen in virtual life as well. Banegas and Manzur (2014) observe that online learning participants demand more group work activities through which they can communicate with their peers. By doing so, they share the feeling of community and most importantly they can also get support whenever and wherever they need it (Mbarek & Zaddem, 2013; Muilenberg & Berge, 2005). The community feeling factor is also put forward by Hoffman (2004), saying that learners want to have interaction not only with online instructors but also with their peers online. They want to feel more involved in the process of learning through which they feel the peer support. As a result, learners learn more effectively and get better learning results than they would have obtained in working individually (Ko & Rossen, 2010). In addition, learning in collaboration helps learners to reduce their "feeling of isolation and of facing the world of learning alone" (Nunan, 2012, p. xi). Besides peer support through online collaborative work, online learners also demand support from other parties such as administrators, and technical support in the educational establishment with which learners are affiliated (Anderson, 2008; Bhati et al., 2010). Consequently, access to them should be made as reliable and flexible as possible. Family support and support from the organization where learners/teachers are currently employed is

also seen to be vital to the success of the online learning and teaching job (Park & Choi, 2009). To make the entire online support task easier to do and make the online learning process smoother, sufficient orientation prior to the online learning and teaching process is necessary (Keengwe & Kidd, 2010).

2.3 CALL Teacher Education

Hubbard (2008) argues that although the future of CALL depends on the future of language teacher education, CALL teacher education is still lacking. Kessler (2006) observes that the number of institutions requiring CALL teacher training is increasing, but not many teacher education programs address this issue of shortage in CALL teacher education. In line with that, the OECD (2009) reports that in general there is a serious shortage of capacity building in terms of ICT use for instruction, especially in the countries that fall under the organization for economic cooperation and development (OECD). Adding to this phenomenon, Hubbard and Levy (2006) mention that many teachers are not able to find formal courses to help them learn more about CALL. As a result, more and more teachers self-educate themselves to be CALL specialists.

Many authors agree with the idea that technology training should be offered as part of teacher education (Hubbard, 2009; Kessler, 2006; Stockwell, 2009). However, not many educational institutions offer technology training for teachers, including CALL teacher training. Hubbard (2008) suggests few possible reasons for why many education institutions do not attempt to provide such training. Inertia is one of them. Those institutions have felt that they have been successful teacher education providers (TEP) and therefore are reluctant to make further efforts to achieve more success. This phenomenon is worsened by the fact that many TEPs do not have enough resources for delivering CALL courses, such as insufficient infrastructure, lack of CALL-capable faculty and experienced CALL educators. Thus, they are lacking a CALL teaching methodology. Moreover, the absence of sufficient

ICT competence for teacher standards makes the TEPs not attempt to help their student teachers to achieve them.

In language teacher education, many attempts have been made to offer technology training for teachers (Hoven, 2007; Kessler, 2006; McNeil, 2013; Stockwell, 2009). However, since the demands for technology competent language teachers is still high (Hubbard, 2008), and TEPs cannot sufficiently meet the demand at the same time, TEPs and individual teachers everywhere around the globe should keep innovating in order to meet the demand. Addressing the high need for technology training for teachers, Stockwell (2009) says that technology training for language teachers is inevitable. Leaving them without sufficient technology training will put them in very daunting situation. Although they may learn the technology themselves, that condition would just make them feel unpleasant and may only focus on learning technology rather than exploring how to use the technology for education. At the same time, with the exponential growth of ICT use in education and ICT use by students, Kessler (2006) notices that it is a common knowledge that ICT training for teachers in the TEPs is often left behind in terms of appropriate technology. The technology used for teacher training in the TEPs is often no longer relevant with the technology used at schools when the student teachers begin to teach later. All in all, addressing the above issues to prepare teachers, both pre-service and in-service, to be ready for infusing technology in their instruction is urgent (Healey et al., 2008; Hubbard, 2008; Kessler, 2006).

2.3.1 Multiple Forms of CALL Teacher Education

CALL teacher education has been taking place in various forms. Several studies have investigated those various forms. Debski (2006), Slaouti and Motteram (2006), and Partridge (2006) have conducted research on the CALL degree programs. Furthermore, Eskenazi and Brown (2006), Hegelheimer (2006), Peters (2006), and Son (2009) have elaborated on the

rationale and the implementation of a number of dedicated CALL courses offered in teacher training programs. Besides these formal CALL degree and courses, there are also some informal forms of CALL teacher education. Robb (2006) comments on the need of individuals to educate themselves in CALL knowledge and skills. Stockwell (2009) adds to this with his self-directed CALL education initiative, and Hanson-Smith (2006) with her investigation into the benefits that a CALL community of practice (CoP) brings to CALL teacher education.

At the degree level, Debski (2006) provides an example of a Master of Arts (M.A.) in CALL where students in the program were guided to learn CALL practices through project-based learning (PBL) activities. Employing such a PBL approach in a CALL program gives many benefits to the students such as experiencing real and authentic case-based collaborative studies, experimenting with real life applicable ICT and pedagogy skills, as well as contributing to solving targeted social problems during their CALL study. Likewise, Slaouti and Motteram (2006) report on their study into an MA in Educational Technology and Teaching English to Speakers of Other Languages (TESOL) in the United Kingdom. They describe how a degree program was willing to change its instructional design based on a narrative study with its alumni. Through the study they investigate their alumni students' needs and concerns. Based on the result of the study, the instructional design of the program was revised and redesigned based on the idea of knowledge categories as suggested by Shulman (1986). The knowledge categories suggested by Shulman are content knowledge, general pedagogical knowledge, and curriculum knowledge, knowledge of learners, knowledge of educational context, and knowledge of educational ends. Framed by those categories, the learning modules were developed to assist students in their learning process throughout the program.

The report suggests that through a reflective study (i.e. narrative study) the educational institution helps itself to keep developing its courses. Through such a study educational institutions learn what the alumni have experienced in their career in relation to their previous education in the institutions. The results of such a study would provide good input for their self-reflection of what they have done well in their program and what other things in the program they still need to work on to improve their performance in the future to equip their students in facing future challenges. Unlike the previous two programs, which were very pedagogical based, the M.A. program reported by Partridge (2006) offers only subjects which are mostly related to technical aspects of CALL; no pedagogical-related CALL subjects are taught in that UK-based program. However, he confidently argues that even without pedagogical subjects taught, the CALL program has paved the way for their students to better their career in language teaching by equipping them with a language and technology related specialization. The degree program also offers students more possibilities in other areas such as website design, language software creation, and network design and management.

At the course level, Eskenazi and Brown (2006) describe a course which was designed to help students to specifically learn about CALL software authoring. The course, which is offered at the final year of an M.A. in CALL in the USA, mostly focused on how to make use of speech recognition technology and how to use it to develop other applications for language learning activities. The goals of the course itself were to give students a good understanding of what counts as good language learning software and how to develop it. They believed that by achieving such goals students would be ready with the necessary knowledge and skills to implement CALL in their future language teaching instruction. Still at the course level, Hegelheimer (2006) reports on his study on a technology course in another M.A. TESOL program in the USA. In his report he emphasizes the importance of

introducing ICT-related knowledge and skills at the early stage of a teacher training program. By doing so, he argues that students would have ample opportunities to try integrating the learned ICT-related skills into other teacher training courses. The results show that there was evidence that students were able to transfer the skills into other discipline courses and create online portfolios. The evidence confirmed that students also achieved good knowledge and skills in web design and multimedia development during their study in the program. Most importantly, with the achieved ICT knowledge and skills, students were able to secure jobs even before they graduated from the program.

In line with Hegelheimer (2006), Peters (2006) focuses on the question of whether in a degree program the technology content such as CALL should be offered in only one dedicated course or spread throughout all courses with only a little CALL content offered in each course. He found that students actually demanded more training to teach language with technology. A one-of technology course at the end of the TESOL program did not make the students confident in their use of technology for language teaching. Therefore, based on the evidence of students' positive attitudes and beliefs towards the use of technology in language teaching, he and his team redesigned the program by introducing technology use in two different ways.

The first way was by offering a technology course at the beginning of the TESOL program and the second was by using technology for online discussion and online collaboration across courses throughout the TESOL program. The first way was aimed at equipping students with necessary technology knowledge and skills to be used for working on other course assignments throughout the program. The second way was aimed at developing sustainable technology-based collaboration habits among students so that they would get used to collaborating online during the program and even after they finished the program. The examples of skills they were trained in in the first instance were PowerPoint

creation and presentation skills, and web portfolio development skills. The PowerPoint skills were meant to be applied by students to create presentations on other course assignments, while the web portfolio skills were expected to be used by students to showcase their work. The web portfolio idea was in line with Son's (2009) web portfolio assignment, which was as an integral part of an online CALL course offered in an MA in TESOL program in an Australian University. Son concludes that using a web portfolio as a compulsory assignment fosters students' (who are in-service teachers) professional development. Moreover, through working on a web portfolio the students could improve "their knowledge and skills of using the internet and be more active in online communication, collaboration, and reflection" (p. 116).

In addition to formal CALL degree and courses, Robb (2006) puts forward the need of alternative informal CALL education for teachers. He argues that formal CALL courses are not sufficient to prepare teachers for future challenges in CALL practices. He outlines some reasons for such insufficiency. The first is the mismatch between what is learned in the CALL class and the real classroom need. Often what teachers learn in the CALL class is no longer relevant for the conditions of the real class in which they will teach. Second, teachers have little control over the technology used during the training and therefore they cannot guarantee that the learned technology will be applicable within the target classroom later. Third is a lack of opportunities to practice the learned technology during the formal CALL course. Fourth, the lack of local support forces teachers to self-educate about the technology in order to cope with the rapid development of technology. For all those reasons, autonomous learning or self-directed CALL learning by teachers is inevitable. To prepare teachers for self-directed CALL learning, he proposes three things that teachers should be aware of: "solid knowledge base, confidence to attempt to use new technology and extend of their use of technology they are already using, and awareness of available resources" (p. 340).

In agreement with Robb (2006), Stockwell (2009) has offered alternative CALL teacher education in the form of a workshop for in-service language teachers. In the workshop he provided working tips and guidelines of how participants could educate themselves CALL-related knowledge and skills. His effort reveals evidence showing that the participating teachers in the workshop faced difficulties in locating CALL-related resources that could assist them in autonomously learning and implementing CALL. However, throughout their CALL self-education process, they learned the importance of learning communities and conferences where they could actually find more help related to CALL. The importance of CoPs is also confirmed by Hanson-Smith (2006) noting that CALL learning for teachers can be made sustainable through joining CoPs. According to her, joining the CALL-related CoPs brings about some advantages for teachers such as peer support whenever they need it, feeling of being in a community, and building experiences and confidence in integrating CALL in their language teaching activities. She highlights some important features of CoPs that can be used as reference for teachers in selecting reliable CoPs. She also advices some practical ways of how to get involved in online CoPs and to make use of them as sources for learning CALL knowledge and skills.

Having learned from the many forms of CALL teacher education above and considering the ever-developing technology as well as educational challenges, one form of CALL teacher education does not seem to be enough for teachers. They need to keep upgrading their technological knowledge and skills. Hubbard (2008, p. 185) asserts that "the future of CALL and teacher education is bright", but there are obstacles and one of them is the lack of qualified personnel who can integrate technology into language education effectively. One way to overcome such an obstacle is by providing CALL teacher education which is easily accessible by any teacher. With the advance of online technology today, providing such easily accessible CALL education online seems to be feasible. Besides,

through online training, teachers would have first-hand experience with technology. They would also learn the potential of the online technology to develop themselves anytime as needed in the future.

2.3.2 Development of CALL Teacher Courses

Reviewing literature on CALL teacher education, there are a few interesting facts that need to be well observed. Hubbard and Levy (2006) state that CALL teacher training is in demand and will always be in demand to accompany teachers to keep up with technology. Much effort has been made to provide teacher education in CALL whether formally in the form of degree programs in CALL or CALL-related courses (e.g.Partridge, 2006; Slaouti & Motteram, 2006; Son, 2009), or even informally such as through learning communities (e.g.Hanson-Smith, 2006; Stockwell, 2009). However, unfortunately, there are still no teacher-focused technology standards that guide such CALL teacher education, especially ones which are related to language teaching (Hubbard, 2008). In response to that, the TESOL consortium have made some proposals with regards to TESOL technology standards (Hubbard & Kessler, 2008). CALL teacher education should then be developed through adapting such standards. In developing CALL teacher education, it is also important to consider Curwood's (2011) recommendation that to make the technology-focused teacher professional development effective, teachers should be allowed to directly experience digital learning in context. The CALL teacher education should be hands on and make use of current and up-to-date-technology usable in language teaching and learning.

In developing online CALL teacher education, Motteram (2014) suggests two things: what the CALL teacher education should provide (materials), and how to provide it (procedure). In this section, to have a good basis for developing CALL teacher education materials, relevant technology competence standards for teachers will be reviewed. Then, to

learn about developing the CALL teacher education procedure, an approach will be developed through reviewing literature on constructivism in online learning, adult learning theory, online instructional models, online instructional design principles, the technological, pedagogical, content knowledge (TPACK), and open educational resources (OER).

Technology competence for teacher standards

Few studies suggesting and directing CALL course development have been conducted (Hanson-Smith, 2006; Hubbard & Kessler, 2008; Kessler, 2006; Slaouti & Motteram, 2006; Son, 2004). In developing a CALL course, Hubbard (2008) recommends that the existence of technology for teacher standards are important in order to appropriately direct CALL teacher education. Consequently, if the standards are not yet available, development of the standards or adaptation from relevant standards should be done. Regarding the development of the standards, Hubbard (2008) suggests that there are at least two approaches to do so. The first is by directly adopting language teaching standards and incorporate technology into them. The second is by adopting technology standards and adjust them to fit language teaching requirements. Samples of specifically developed and ready-to-use standards, intended for guiding teacher education in CALL, can be seen in Hubbard and Kessler (2008) and Healey et al. (2008).

Besides the available technology standards for language teachers (e.g. Hubbard & Kessler, 2008); Healey et al., 2008), in developing a CALL teacher course, it is also necessary to take into account relevant and specific socio-political backgrounds of the target students and institutions, because of the contextualization purpose that is seen as a potential facilitating factor in a course (Anderson, 2008), which in this case is a CALL teacher course. Standards that might be referred to when developing a CALL teacher course can be various. There are standards that may be associated with language and technology, while others may

be associated with local government teacher education policies, local teacher education curriculum, and local institutional educational delivery standards. Table 2.3 shows samples of a number of standards that are referred to when planning or designing a CALL or technology course for teachers in the study. It starts with the Indonesian ICT competence for teacher standards, which later will be used as the main reference when developing an Indonesia-specific CALL teacher course, which are then followed by a number of other standards as well as their brief description.

Table 2.3 *Standards of ICT for Teachers and 21st Century Competence*

Standards	Description
Indonesia ICT Competence for teachers standards (draft) (Purwanto, Bodrogini, Sumarwanto, Chaeruman, & Butcher, 2012)	The standards which are at the time of the study still in draft, will be the first ICT competence standards for teachers in Indonesia when they are officially issued. The standards provide guidelines for ICT competence development in pre-service and in-service teacher education.
SEAMEO Competency Framework 4 SEA teachers of the 21st century (Widiani et al., 2010)	Reports on teaching competency standards in south east Asian countries supported and issued by the South East ASEAN ministers of education organization (SEAMEO)
UNESCO ICT Competence for Teachers (UNESCO, 2008)	This UNESCO supported standard is designed for the professional development of teachers who will use ICT to improve their teaching and collaborate with their peers.
ISTE Standards for Teachers (ISTE, 2008)	The standards were designed to help evaluate teachers' skills needed to function in an ICT-rich society by the international society for technology in education (ISTE)
Framework for 21st Century Learning (P21) (P21, 2011)	The framework was developed by the partnership for 21st century skills (P21) USA. It was aimed at describing skills, knowledge, and expertise students must master to be successful in work and life.
International Computer Driving License standards (ICDL) (http://www.icdlasia.org/)	ICDL develops ICT-related competencies and practical skills standards consisting of 3 modules. The modules are mostly aimed at developing and certifying participants' computer skills. ICDL itself is a body providing ICT-related certification.
TESOL's New Technology Standards (Hubbard & Kessler, 2008)	A draft of standards is aimed at providing guidance for appropriate use of technology and support best practice in CALL in various settings.

Standards	Description
TESOL Technology Standard Frameworks (Healey et al., 2008)	This technology consists of standards specifically designed for use in EFL or ESL settings. They are designed to provide guidance for both teachers and students who would like to integrate technology in their instruction in face to face classes, blended classes, or even purely online classes.

Accommodating all the standards in one CALL teacher training course would be too difficult, especially if it is only a one or two semester course embedded in an undergraduate or graduate program. A difficulty may arise because those standards target a wide array of knowledge and skills. Therefore, careful selection of the standards that meet the expectation of local institutional policies, local government policies and local curriculum, should be made. The selection process is meant to find similarities and priorities of knowledge and skills to be taught, as suggested across those standards. Once the similarities in priorities are identified, the expected CALL teacher course standards can then be developed.

Besides the policies and curriculum, few other things should also be considered during the selection of the standards. The first is the idea that in order to be able to educate students to use technology, teachers should firstly know the technology. This means that teachers should become technologically literate (ITEA, 2003). Technology-illiterate teachers cannot be expected to teach with technology well. Consequently this means that CALL course content should be ensured to equip teachers with technology knowledge and skills, which are up-to-date. Thus, standards associated with technology knowledge and skills should also be prioritized. The second issue is that pedagogy should come first before technology, because for teachers technology is just part of pedagogy (Compton, 2009; Hubbard, 2008; Kessler, 2006). Technology is merely an aid that can be used to assist pedagogy. Accordingly, when interpreting the above mentioned standards for the purpose of developing a CALL teacher training course, one should be more focused on pedagogy than

technology (Healey et al., 2008). As a result, selecting pedagogically relevant standards should be another priority. Also, it is important to accommodate standards associated with the essential skills for success in today's world such as communicating skills, collaborating skills, critical thinking, and problem solving (P21, 2011).

Selecting one standard in the list (See Table 2.2) to adopt in a CALL teacher course is probably a good start. However, as Healey et al. (2008) advice, specific technology standards for developing CALL teacher education should not limit the expectations of a teacher education program. Adopting only one standard is implementing just such a limit because one standard is unlikely to be able to accommodate various expectations and address various limitations that CALL teacher education programs might have. Alternatively, selecting various relevant standards to adapt and to tailor new CALL teacher standards should be done to ensure many expectations of the CALL teacher programs can be accommodated. Midoro (2013) asserts that adaptation to meet local expectations of the teacher education program is unavoidable. For reasons of adaptation, it is therefore believed that considering more standards will provide more varied inputs. Moreover, drawing on various standards to be adjusted to local standards (such as local curriculum and local government policies) as a way of developing localized and contextualized standards would very likely meet local CALL teacher education needs. The adaptation process should be carefully planned and executed in order to assist in optimizing the local potential and resources as well.

Constructivism in online learning

Constructivism is a theory about how humans construct their own knowledge during the process of learning. It examines ways in which humans make meaning of what they experience as part of their learning process (Bryceson, 2007). The theory is based on Piaget's theory of cognitive development (Kaufman, 2004; Powell & Kalina, 2009). According to

Piaget's theory, human beings cannot be forced to understand information and then directly use it. Instead, human beings need to process and to construct knowledge through experiencing it and reflecting on it (Piaget, 1953). Although this theory is not pedagogy-specific, it seems that it has influenced many education reform movements so far ("Constructivism," 2014). Powell and Kalina (2009) note that there are two major types of constructivism in the classroom environment: cognitive or individual constructivism, and social constructivism. While the former is based on Piaget's theory, the latter is based on Vygotsky's.

In Piaget's theory, children are perceived as developing into individuals, who can reason and think, through processes that are called assimilation and accommodation. The assimilation process happens when children receive new information and try to bring it into their own schema (existing knowledge). Then, when children are ready to process further, they will try to adjust their schema to 'accommodate' the new information. This is where the accommodation process happens (Kaufman, 2004; McLeod, 2009; Powell & Kalina, 2009). In a teaching and learning process such as in the classroom, where students are supposed to receive new information and where the process of assimilation and accommodation in students' individual cognition processes happen, it is the teachers' job to facilitate the assimilation and accommodation process. Similar to Piaget's ideas about individual constructivism, Vygotsky's social constructivism also perceives learning as happening within individuals where children receive and process information based on their critical reflection of what they have experienced. However, according to Vygotsky's social constructivism, social interaction (such as when they are in the classroom) is seen as assisting children in their receiving and processing information process. Therefore, although students in the classroom may learn by themselves, they will learn more easily and will be assisted when

others, such as teachers and their peers, are involved (Kaufman, 2004; Powell & Kalina, 2009).

In the online learning environment the process of either individual or social constructivism are very much enhanced by the availability of various online tools. Search engines for example, enable students to easily search for relevant information and confirm their understanding towards that information in a breeze. Thus, the process of assimilation and accommodation, as suggested in the individual constructivist paradigm, can be shorter. Through social communication tools such as social media, discussion boards, mailing lists, and LMSs, the idea of social constructivism is well supported because through such media students can easily interact virtually to share knowledge and assist one another. Bryceson (2007) confirms that the utilization of learning managements systems (LMSs) in online learning is one of successful socialization mechanisms that assist students' learning. Similarly, Carwile (2007) points out that through the medium of the LMS, deeper reflection leading to deeper understanding is facilitated. Deeper understanding is possible because in a shared online space such as in an LMS, students learn together in a virtual crowd where they can share various interpretations and perspectives with their online peers. Thus, eventually by getting involved in such virtual discussions, they are exposed to ample choices of interpretation and perspectives to select and to help them further process the knowledge within themselves. This is thus when the socially-assisted process of assimilation and accommodation of new information within the students happens.

Adult learning theory

Fidishun (2000) acknowledges that Malcolm Knowles' theory of andragogy provides an effective methodology for adult learning. He recommends that it be integrated in the design of technology-based adult learning, which will not only facilitate adult learners' needs

to use technology but also fulfil their requirements as an adult. In a CALL teacher education program where the participants are normally adult learners, the idea is believed to be essential. As adult learners, teachers are very likely to have had years of experiences in education whether as students or as teachers. Accordingly, they have already had experiences, knowledge, motivation, and goals that may direct them to decide what to do in their learning.

In Knowles's andragogical model there are some basic assumptions about adult learners. First, adult learners are autonomous and self-directed. Consequently, they should be involved in determining what to learn and how they want to learn. They should be given the opportunity to be responsible for their own learning and for contributing as active learners during the learning sessions (Cercone, 2008; Lieb, 1991). Secondly, they have already had life experiences and knowledge. This will benefit them if they can relate what they are learning with their previous experiences and knowledge. Learning will then be much more meaningful and contextual to them as well as more motivating. Yet, their previous learning experience may also bring about some potential negative effects such as resistance to new knowledge due to mental habits formed by previous experiences (Knowles, Holton, & Swanson, 2005). Third, most adult learners are relevancy-oriented, meaning that they need to know why they learn specific things. For this reason, it is essential that teachers identify learners' objectives for learning in order to design lessons that meet their expectations and thus further motivates them. Fourth, adult learners are practical. Teachers, therefore, have to let their adult learners know how particular knowledge they learn in a course or program may fit into their preferred job. Additionally, they should be informed how their learning will be useful to assist them in performing life tasks and solving life problems. Fifthly, the assumption is that adult learners need to be shown respect. Therefore, they should be treated

as individuals having experiences and knowledge. For that reason, teachers should give them opportunities to express opinions and share knowledge with others in the class (Lieb, 1991).

Online instructional models

Many have argued that shifting to online instruction does not mean simply copying face- to-face teaching materials to an online learning management system (Ko & Rossen, 2010). There is a lot more to be done such as preparing strategies to accommodate students' online learning preferences, choosing the right instructional model and strategies, and selecting suitable resources available and needed for online instruction. According to Anderson and Elloumi (2008) they are very important and have great influence on the effectiveness of students' online learning. In addition, Salmon (2013) recommends that to go through the process of online instruction successfully and happily, students need to be well-prepared and supported through a structured developmental process. Once the students feel happy and achieve success, teachers and other stake holders will also gain satisfaction because their efforts are paying off. As a result, they will be motivated to keep on performing well in the online environment (Bolliger & Wasilik, 2009). Below are three distinct models of online teaching and learning that direct the online instruction and offer a structured developmental process through structured scaffolding to support students' online learning. The models are developed in various different context but they are all aimed at helping learners to learn online.

The first model is proposed by Lan, Chang, and Chen (2012). The model is developed to deliver synchronous online instruction to train teachers to have better ICT capacity to teach foreign languages online and synchronously. In this three stage model, they propose three different elements to focus on during each stage: cognition, action, and reflection (see Figure 2.2). In the cognition stage, which is the first stage, students learn the technology that can be

used for synchronous online instruction. During this stage they also learn pedagogical theories to inform them what to do during the teaching practice they will have to do in the next stage. Subsequently, students directly implement what they learn during the first stage through an online peer teaching practice in the second stage, which is called the action stage. During the action stage their teaching practices are recorded. This record is later used for self-reflection and peer reflection in the third stage, the reflection stage. This model is reported to benefit students much in their experience of directly implementing theories into practice. Because of that experience, students become aware of the gap between knowledge and reality and the gap between planning and action. The students taught using the model are also reported to have made sound and gradual progress in their ability to design online synchronous teaching activities.

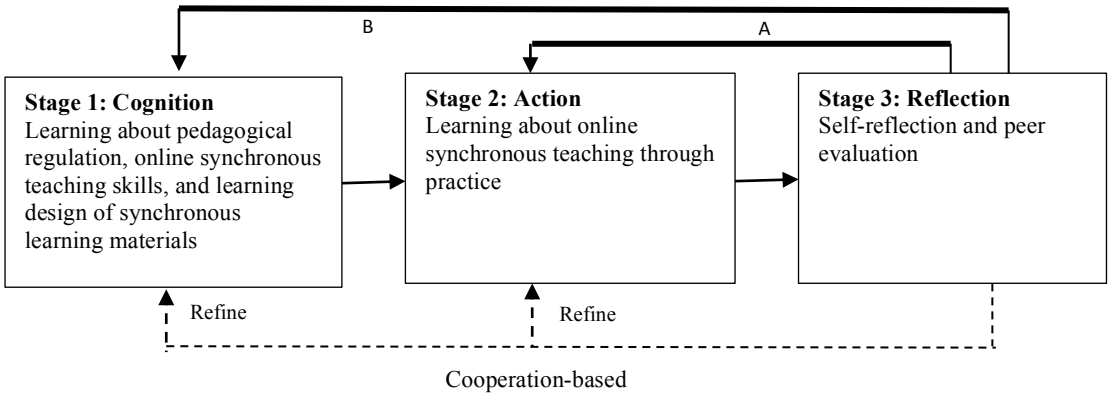

Figure 2.2 Three-stage CoCAR model for online synchronous teacher training (Lan et al., 2012)

The key successful feature of the model seems to be in the cyclical process between stages, especially between stage 2 and stage 3 (solid arrow A). In those two stages students have the opportunity to implement synchronous online teaching practice and to reflect upon their teaching performances. Their reflection and feedback by their peers leads them to decide whether or not they need to redesign their teaching practice for implementation in their next teaching practice. If things go wrong, such as if the students fail to comprehend the pedagogy

and the technology, they will have to start over in their learning processes from stage 1 (solid arrow B). The other successful features of the model are collaborative work and reflection activities that are strongly promoted during the learning process. Throughout the three stages of learning, collaborative work among students is encouraged. The collaborative work is promoted even more during the action stage when students collaboratively design their online teaching practices. Then, in the third stage, where all the learning experiences are concluded by doing the reflection activity, students are led to internalize what they have learnt and what they still need to work on so that they know what to do next.

The second model is the explicitisation, socialisation, combination, internalisation and externalisation (ESCIE). The designer claims that the acronym is similar in sound as the word ESKY in Australian English, which refers to an icebox that is usually used to carry things for socialization purposes such as drinks. The model is developed based on Vygotsky's social constructivism and the knowledge creation model of Nonaka and Konno (1998). Nonaka and Konno call their four stage model SECI. According to them the model describes "how tacit knowledge through a process of **S**ocialisation, is **E**xternalised (becomes explicit), with the explicit knowledge then being **C**ombined via communication and diffusion processes across peers or a group, to be finally **I**nternalised by group members as learning". The SECI process is said to happen in a 'Ba', an imaginary and conceptual place of where and how the knowledge is created (Bryceson, 2007). Following the two theories, he then proposes the following model of online learning (see Figure 2.3).

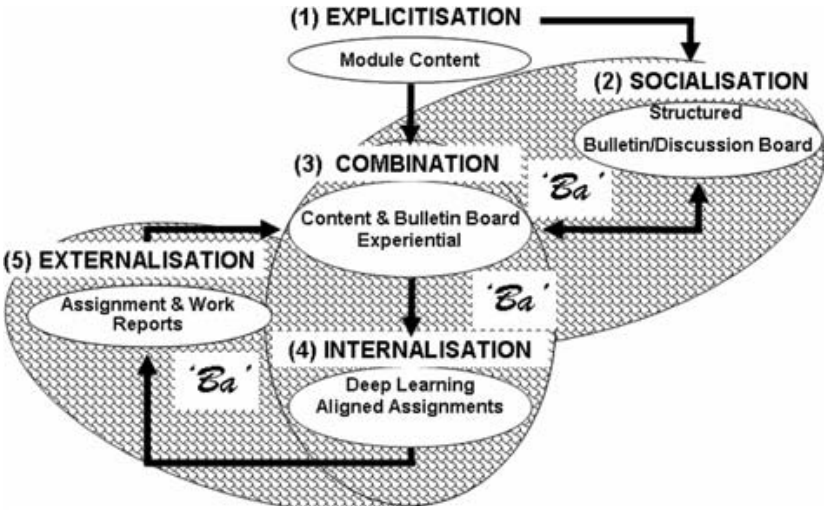

Figure 2.3 ESCIE online learning model (Bryceson, 2007)

According to Bryceson, the knowledge creation process happens once the students visit the learning website consisting of the learning content modules (explicitisation stage). After that, students go through the socialisation stage where they do the online discussion to share and construct knowledge together with their peers. It is in this stage where their tacit knowledge is made explicit as a result of online exchanges with their peers. At the same time, students also enter the combination stage, where they combine knowledge gathered from online discussions with knowledge they obtain from reading the content modules. To internalize the newly obtained knowledge they then do the assignments set by their teachers. At the final stage they are to produce a written output as part of the process of externalization of the newly internalized knowledge.

The third online instruction model is proposed by Salmon (2013). Her idea of the five-stage model is to provide scaffolding to individual development. Providing such scaffolding is believed to be one way of moving from direct instruction to a constructivist teaching approach. Figure 2.4 depicts her model.

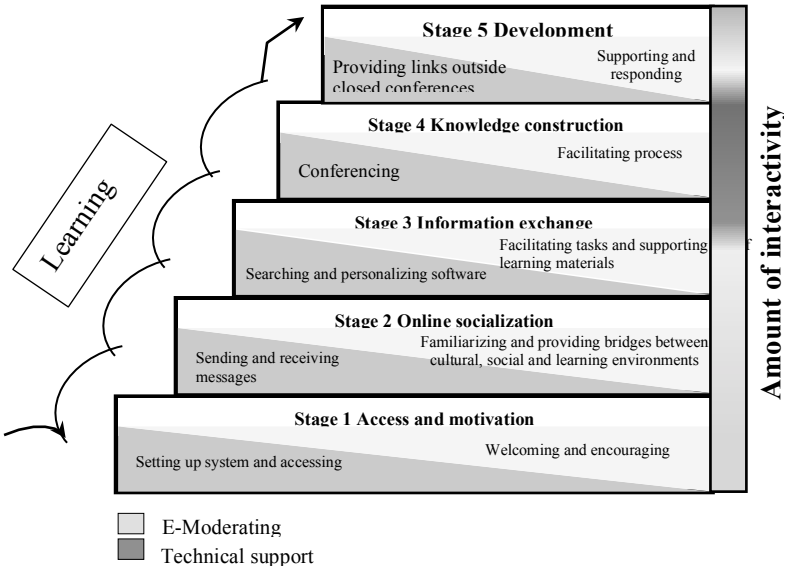

Figure 2.4 Model of teaching and learning online through online networking

The model consists of five stages. Stage 1 is dedicated to making sure that students have the ability to access and use an online system such as WebCT or Blackboard virtual learning environment. This ability is an essential prerequisite for the success of an online learning program. At this stage tutors motivate students to acquire social and emotional capacities in an online environment by providing a brief overview about the course and help them to feel comfortable with the system used. At stage 2, students are encouraged to establish initial interactions with others to familiarize them with online tools for communication and with the online environment. Next, at stage 3 participants are encouraged to exchange information relevant to the particular topics, and in the meantime tutors help students with ways of finding answers on the Internet to the given tasks or issues that they may encounter during the course. At this stage tutors also provide feedback on students' activities and introduce assessment. After that, at stage 4 students are grouped to do online discussions and work collaboratively, while tutors facilitate the process of the online collaborative work. At this stage students are motivated to be authors of information instead of only receivers of information. Finally, at stage 5 tutors guide students to explore more benefits of the available

online learning system to achieve their personal goals, and to reflect on the process they have been through to realize what they have achieved during the program.

Online instruction design principles

Designing online instruction needs to be based on solid theoretical foundation. Many studies suggest such theoretical foundations for designing online instructions and these are summarized below. Based on such studies, online instruction design principles can be classified at least into the following key principles: (1) reliable and accessible supports, (2) involving collaboration components, (3) continuous, constructive and meaningful feedback, (4) contextual teaching and learning, (5) timeliness, (6) reliable technology and sufficient technological skills and knowledge. Reliable and accessible support is probably the first important principle for online instructional design that needs to be well considered. Bailey and Card (2009) emphasize that engagement by students and teachers should be maintained throughout the course. Such engagement is important to provide continuous, accessible and timely support and assistance required by students (Anderson, 2004; Elias, 2011; Gunn, 2011; Jung, 2005b). Through such engagement students feel that they are not alone, but instead they feel they are in a community, which is the feeling that most online learners expect to have while learning online (Banegas & Manzur, 2014). One way to provide such a feeling of being supported in a community is through the use of various computer mediated communication (CMC) tools. Lan et al. (2012) suggest that for the purpose of task-oriented communication the use of asynchronous CMC (email, bulletin board, social media) is worth suggesting, while for the purpose of socialization, the use of synchronous CMC (chat messengers, video conferencing tools, online whiteboard) is identified to be preferred by online learners. By using either type of CMC appropriately teacher and students are facilitated to be always present in the online environment.

Pelz (2010) highlights three kinds of online presence, which according to him add value to the online discussions: social, cognitive, and teaching presence. Social presence occurs when the teachers or students participate in a 'real people' discussion online. Such discussion usually involves feeling, emotion, and moods as learners or as teachers. They share thinking, commitments, goals, and objectives in such online exchanges. Likewise, cognitive presence happens in the online environment and refers to "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (Garrison, Anderson, & Archer, 2000). Through such communication they share opinions to construct meaning from conceptual or theoretical knowledge presented or discovered in the course or in an online discussion. Then, the teaching presence occurs when the online teachers give direction or facilitation to the online students. Although this type of presence can actually be performed by any participants in online instruction, this specific presence is usually the primary responsibility of the teachers. These three types of presence are to be cultivated among teachers and students so that they can feel that they are in an engaging learning community. With this feeling they are assured that they should not worry about getting access to support by peers and by experts, and this is the feeling that should be catered for by teachers or online instruction designers, in order to build effective online instruction (Herrington, 2006).

In addition to support, the second principle involves collaboration components in online instruction. Collaborative works are very much recommended to be experienced by online learners (Bailey & Card, 2009; Elias, 2011; Gaytan & McEwen, 2007; Pelz, 2010; Son, 2014) because collaborative work is are not only useful to promote active learning (Bailey & Card, 2009), but also to train students to develop higher order thinking skills by means of doing activities such as discussions, case studies, and group assignments (Yan, 2009). The collaborative components can also be promoted through consistent interactions

(such as through social media, discussion boards, mailing lists, group messengers etc.) among online participants to build strong learning communities as well as learning support (Gaytan & McEwen, 2007). According to Pelz (2010) interactions are the heart and soul of effective online instruction. He further argues that it is through interactions via online discussions that his students and his fellow teachers actually learn a lot in the online environment.

The third principle is continuous constructive and meaningful feedback. This kind of feedback gives students information as to how they actually perform in their study. According to (Bailey & Card, 2009) feedback contributes much to the students' success in learning. Similarly, Gaytan and McEwen (2007) find that timely feedback for online learners is not only preferred but also mentioned as one of the advantages of online learning. They even discover that most online participants expect timely feedback to be primarily considered when teachers make an effort to improve their online learning assessment. In short, feedback is a critical success component in online learning (Bailey & Card, 2009; Gaytan & McEwen, 2007; Gunn, 2010). Therefore, teachers should guarantee that timely feedback should always be accessible by students anytime and anywhere.

The fourth principle is contextual teaching and learning (CTL). CTL is based on the idea that the education process should be aimed at helping students to make meaning of what they are learning by connecting it to the context of their daily lives (Johnson, 2002). Accordingly, teachers in the class should make any effort to show students the connection between what they learn with what they may experience in the real world (Hudson & Whisler, 2008; Shamsid-Deen & Smith, 2006). In an online environment Park and Choi (2009) confirm that the clearer the connection, the more likely that students are motivated to keep learning. In CTL students are introduced to content through various active learning strategies such as learning by doing, case studies, problem solving, and discussions. Those strategies are aimed to train students to practice higher order thinking skills, which according

to Yan (2009) is one of the instructional goals in online instruction. Performing such CTL strategies in online learning is a viable and do-able process for both teachers and students. Working on a wiki project, an online discussion in a bulletin board, and a peer tutorial are just a few examples of online learning techniques that correspond with such CTL strategies. Another important component that makes up CTL, as mentioned by Johnson (2002, p. 165), is authentic assessment, which is an assessment aimed at linking what students learn with the assessment in meaningful ways. It challenges students to apply what they learn in a real situation. In online instruction, similarly, Rourke and Coleman (2011, p. 165) argue that "educators should consider aligning course assessment to real world relevance". They further say that today's online tools such as web logs and social media can be used to achieve such real world relevance goals. An assessment using such online tools can be a good and authentic one especially if the assessment is designed to encourage collaborative learning and reflective practice (Herrington, 2006).

The fifth design principle is timeliness. Timeliness in providing feedback, timeliness in responding to students' questions or posts, and timelines in providing support are very essential in online instruction. Gaytan and McEwen (2007) suggest timely feedback as one of the online strategies to better improve the quality of online assessment. They recognize how important timely feedback is in online assessment after knowing that many students suggest it to be an important element in the courses they are doing. Bailey and Card (2009) also suggest that timely feedback on students' work and performance gives the students much opportunity to benefit from the online courses they are doing. According to Gunn (2010) timely feedback is an important design principle that is a determinant to the success of online learning. Being able to respond to students' posts in a timely manner is also indicated by Gunn as necessary behaviour of effective online teachers. Besides timely feedback and response, Jung (2005b), investigating ICT-rich training, also suggests the necessity of providing timely support for

students by empowering staff to be ready for providing support and to be involved in the training process.

The sixth design principle is reliable technology and sufficient technological skills and knowledge. The technology used in delivering online instruction should be reliable and compatible with all online participants' devices. Many researchers have found that technology often becomes an issue in online instruction if it is not reliable (e.g. Keengwe & Kidd, 2010; Muilenberg & Berge, 2005; Sun et al., 2008). Students often find learning online frustrating and demotivating whenever they cannot access the materials or whenever the technology being used is not easy enough to master (Anderson, 2008). However, it is not only the technology that should be prepared; both teachers and students should also be prepared to have sufficient technological knowledge and skills in order to perform appropriately in online instruction. Without such knowledge and skills they may encounter difficulties in following and functioning in the online instruction environment. Therefore, it is necessary to provide technology training for both teachers and students prior to the commencement of online instruction (Bhati et al., 2010; Ko & Rossen, 2010; Sun et al., 2008).

The Technological, Pedagogical, Content Knowledge (TPACK)

In a technology rich teaching and learning environment, to engage learners, teachers should be competent in technology, pedagogy, and content knowledge (Lan et al., 2012). In line with this, Koehler and Mishra (2009, p. 60) state that "the interaction of technology, pedagogy, and content both theoretically and in practice produces knowledge needed to successfully integrate technology use into teaching". Mishra and Koehler (2006) developed a framework to help understand the complexity of knowledge and skills that have to be mastered by teachers in order to effectively integrate technology in teaching. The framework was developed based on Shulman's idea of pedagogical content knowledge. He refers to such knowledge as the integration of teachers' content knowledge and pedagogical knowledge. He

argues that the knowledge is significant in the teachers' performance in teaching (Mishra & Koehler, 2006; Shulman, 1986). By adding the component of technology knowledge to Shulman's idea, Mishra and Koehler (2006) proposed the concept of technological, pedagogical, content knowledge (TPACK).

The TPACK encompasses 7 components of teachers' knowledge: Technology Knowledge (TK), Pedagogical Knowledge (PK), Content Knowledge (CK), Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), Pedagogical Content Knowledge (PCK), and Technological Pedagogical Content Knowledge (TPCK). Koh and Divaharan (2011) clarify that there are two main groups of knowledge in TPACK. The first group comprises of TK, CK, and PK. TK is the teacher's knowledge of technology /tools that they can use for teaching or learning. CK is teacher's knowledge about the subject matter to be taught or learned. PK is the knowledge that should be possessed by teachers in order to be able to teach. The second group of knowledge is derived from the interactions of the three bodies of knowledge: technology, pedagogy, and content. Thus, the interactions form the TCK, PCK, TPK, and TPACK is shown as the intersection of the three knowledge in Figure 2.5.

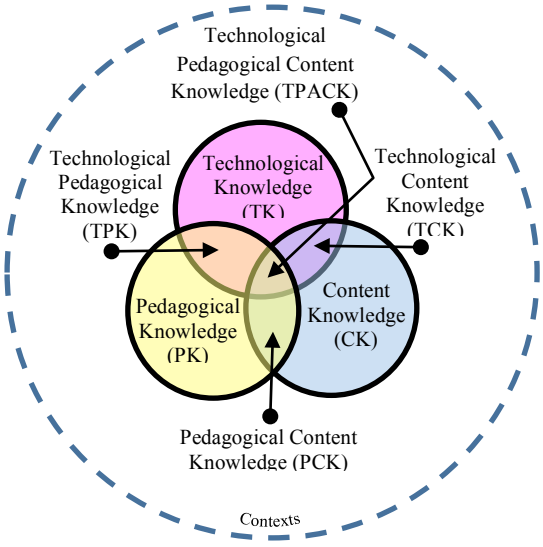

Figure 2.5 The TPACK framework and its knowledge components

The definition of PCK, TCK, and TPK are often found to be significantly different within literature discussing TPACK (Cox & Graham, 2009). However, there are actually similarities among the definitions that allows them to be defined as follows. PCK is often referred to as knowledge about the content to teach and how to teach that content to students. TCK is knowledge that enables teachers to appropriately select and use technology to communicate particular content. TPK is knowledge about how particular technologies can be used to influence teaching and learning. TPACK is complex knowledge that is a combination of the above-mentioned 7 components of teachers' knowledge. It is the basis of effective technology-assisted teaching requiring teachers to have good understanding of pedagogy, content, and technology. However, it is not only knowledge about each of those components individually but rather it is knowledge about how the combination of the components can be used together to facilitate students to learn effectively (Cox & Graham, 2009; Harris & Hofer, 2009; Koehler & Mishra, 2009; Mishra & Koehler, 2006).

So far, there have been a growing number of studies on the TPACK framework. Some embrace it as a potential model for directing or evaluating the implementation of technology in education (e.g. Harris & Hofer, 2009; Koh & Divaharan, 2011; McGrath, Karabas, & Willis, 2011; Schmidt et al., 2009), while some others criticize the framework and even suggest the need for improvement of the framework (e.g. Archambault & Barnett, 2010; Graham, 2011; Voogt, Fisser, Pareja Roblin, Tondeur, & van Braak, 2013). Despite the critics, the TPACK framework has been gaining much attention of educational technology researchers and have been perceived positively by many of them as guidance for the integration of technology in education. It has also been used as framework for developing teacher education courses on ICT in education. Many have reported that the framework has been positively useful for ICT course development purposes (e.g. Chai, Koh, & Tsai, 2010; Koh & Divaharan, 2011; Maor, 2013; McGrath et al., 2011). Therefore, it is not surprising

that many teacher education programs have been redesigned based on the framework (Chai et al., 2010). Thus, developing another teacher course on ICT in education based on TPACK is worth doing. Whatever outcomes result from the study later, can be a contribution to enrich the literature on the study of the TPACK framework and ICT education for teachers. In this study the knowledge of TPACK, therefore, will be used to guide the development of the CALL teacher course delivered online.

Open educational resources (OER)

Nowadays the practice of re-using online educational content for teaching and learning is ubiquitous (White, Manton, & Warren, 2011). This type of online content is often referred to as open educational resources (OER), which are recognized by many as resources that are given open licenses and thus give the end users such as educators, students, and self-directed learners rights to use and re-use them for teaching, learning, and research (Atkins, Brown, & Hammond, 2007; Friesen, 2013; OECD, 2007). The OER, found mostly in the form of online resources today, seems to offer much value for teachers especially in saving educators' time, which used to be used more on developing materials. However, with OER today, teachers can dedicate more time to selecting good and appropriate OER and finding ways of how to enable them to be used in their online instruction. It is suggested that for teachers to make use of OER, they should not merely assume that they can easily and rapidly develop courses. On the contrary, they should consider spending more time on assessing how the OER can be used to enhance their teaching and learning practice (White et al., 2011). By using OER teachers can relatively easily vary their students learning experiences because of the richness of available OER today. The OER, which is created by various people from around the world, can be found in various forms such as full courses, course modules, syllabi, lectures, assignments, course materials, videos, games and simulations (Atkins et al., 2007; McGill, 2013; White et al., 2011).

Using OER offers both teachers and learners benefits and challenges. Some benefits of using OER for teachers are that they are ready and freely available for use. It means that teachers can instantly use them without any cost. Many of the OER are often regularly updated which means users can always have up-to-date learning materials. However updating can sometimes cause problems of dysfunctional links. Therefore, authors and users should be very careful. Since the OER are in the form of digital materials and available mostly online, they can be easily translated from one language to others by using web-based translators, or other translating tools which are nowadays easily accessible ("Benefits of open educational practices and resources," 2014). Other benefits of OER as mentioned by the OECD (2007) and Hodgkinson-Williams (2010) are related to economic reasons, publicity reasons, personal satisfaction, as well as for increasing teachers' personal reputations. Table 2.4 shows a summary of benefits and challenges in using OER suggested in the literature.

Table 2.4 *Benefits and Challenges of OER*

Authors	Benefits	Challenges
Wheeler (2010)	▪ Sharing development costs of learning resources ▪ Promoting digital competencies ▪ Tools and content that enable learners to develop creativity and critical thinking ▪ Improving the quality of content ▪ Supporting lifelong learning ▪ Wider accessibility to resources ▪ Offering wider range of subjects and topics to learn ▪ Saving time to develop materials ▪ Copyright issues is resolved	
Caswell, Henson, Jensen, and Wiley (2008)	▪ Accessible by wider audiences at no cost or just a little ▪ Enablers to universal rights to education ▪ Making distance education a tool for social transformation ▪ Faculty members can easily shares their work with others	▪ Content licensing can be troublesome if used with other contents licensed under different licenses.
Hodgkinson-Williams (2010)	▪ Learners can easily access materials from around the world ▪ Promoting informal learning ▪ Teachers can preserve the records of their teaching and others can build upon them ▪ Teachers can gain reputation by being online and share their work ▪ Education institutions may improve their	▪ Hardware reliability and compatibility issues ▪ Absence of technical skills ▪ Assuring the shared contents' quality ▪ Low interest in others' created resources ▪ Quality assurance and financial sustainability

	recruitment because students can easily find them ▪ Promoting lifelong learning	
Thakrar, Wolfenden, and Zinn (2009)	▪ Possible exposure to authentic samples (e.g. vocabularies by native speakers) ▪ Representing multinational ideas ▪ Democratising access to knowledge ▪ Promoting communities of practice	▪ Hardware issues (such the reliability of internet connection, printers and other technology-related devices) ▪ Technological knowledge and skills ▪ Discoverability of the OER and adaptability of the OER

Knowing that OER may add many benefits, the question that is often of concern for teachers is *how to integrate them into their teaching practice?* White et al. (2011) identify various ways that teachers make use of OER in their instruction. They found that thirty nine percent of the teacher respondents use OER as is without any modification, twenty eight percent use OER but with modification and adaptation here and there to suit their teaching/students' needs, twenty two percent use the OER without modification but provide the introduction or guidance for use with OER materials, and eleven percent use OER only as source of ideas that they can later use to develop their own content for their own teaching purposes. Deciding on how to use the OER actually depends on many factors such as technical knowledge and skills, technology compatibility, learning needs, curriculum goals etc. Another factor that determines the use of OER is whether or not the OER wanted is easily discoverable. Discoverability is another issue for OER that still needs to be addressed by many OER authors (Thakrar et al., 2009; White et al., 2011). So far, OER users usually find OER through search engines, trusted sites, and OER or institutional repositories (White et al., 2011).

Other issues with OER, as stated by Panigrahi (2014), are copyright issues, quality assurance, sustainability issues, and discoverability issues. Although most of the OER are licensed under a creative commons (CC) license which allows users to reuse, remix, and share the content legally, the degree to which the activities (reusing, remixing, and sharing) can be done is still limited with some conditions that characterise different types of CC licenses ("Creative Commons Australia," 2010). The quality issue of OER is dominant in the

literature. Many people consider this issue when they want to use a particular OER. They want to make sure that the OER they use is of good quality in terms of content, technology, image used etc. Sustainability is also worth considering. Since many OER are hosted in public domains, their URLs' accessibility should always be confirmed. Their inaccessibility caused by broken links will of course create problems for users who need to refer to the OER. Often the sustainability of the OER is related to the funding awarded to the people who make the OER available. Hence, it is important to make sure that there is a good plan to keep the OER available even without depending on funding donors. Another issue of OER is related to its discoverability, often caused by factors such as search engine issues and low searching skills (Panigrahi, 2014; White et al., 2011). Therefore, teachers or course designers should consider providing necessary training on information literacy skills at the beginning of the course.

So far, much effort has been applied by OER enthusiasts to compile OER in the form of annotated links in websites which are either personally or even institutionally maintained. Those websites are organized for different purposes and in various ways. The following Table 2.5 lists some OER sites that can be useful for finding OER for teachers, students or self-directed learners.

Table 2. 5 *Annotated List of OER sites*

Categories	URL	Annotation
General Search Engines	▪ http://www.google.com ▪ http://www.yahoo.com ▪ http://www.bing.com ▪ http://www.lycos.com/	People today most probably start searching things using these popular search engines. OER can also be easily found using these tools, especially by using the advance features they provide.
CC Search tools	▪ http://search.creativecommons.org/	A creative commons (CC) search tool. Although, this tool is specifically designed to find content with CC licenses, it is advisable that users of the site should check as not all search results are under CC license.
Video Search Tools	▪ http://www.youtube.com ▪ http://www.vimeo.com	Video database sites that allow people to find and share videos.

Categories	URL	Annotation
	▪ http://archive.org/details/movies ▪ http://www.ted.com/ ▪ http://cc.aljazeera.net/	The videos can be of various licenses, but many videos with CC licenses can be easily found there by applying built-in filter provided in the site.
Image Search Tools	▪ http://www.google.com/advanced_image_search ▪ http://www.pixabay.com ▪ http://openclipart.org/	Finding images using this tool has never been easier. Though not all images found are free to use but by using built-in filters in the sites, one can easily find the free ones.
Open Textbook Search	▪ http://www.collegeopentextbooks.org/ ▪ http://openstaxcollege.org/ ▪ http://projects.siyavula.com/ ▪ http://www.ck12.org/ ▪ https://www.boundless.com/	These sites provide access to open textbooks developed and peer reviewed by educators from around the world. Although most of the books are science and mathematics-related, they can still be used for language teaching purposes.
OER Database	▪ http://www.merlot.org/ ▪ http://cnx.org/ ▪ http://oerconsortium.org/ ▪ http://www.oercommons.com ▪ http://www.openculture.com	These websites are databases for OER. The content ranges from full courses, to images, video, recorded lectures, lesson strategies etc.
Open Courses	▪ http://oeru.org ▪ http://www.coursera.org ▪ http://www.edx.org ▪ https://www.futurelearn.com/ ▪ http://online.stanford.edu/courses	Learning with world class universities, accessing world class knowledge and experts is not difficult today through these websites. Learners can easily choose from various available free courses and obtain certification when they complete the course.
Learning Management System	▪ httt://www.schoology.com ▪ http://www.myhaikuclass.com ▪ http://www.coursesites.com ▪ http://www.edmodo.com	To start developing online learning, one will need these websites. They provide free access for registered users to instantly create their online courses or just online elements of their face-to-face courses. The features offered here include materials/assignment organizers, grade books, quiz creators, students learning statistics, attendance etc.

The sites in the tables only provide tools, and they are worthless when users do not know what to do with them. Instead, it is even possible that the online tools would just cause confusion for users if the users do not have a clear plan of how to engage with them. In the same vein, Son (2011) advises that teachers should be "knowledgeable and skilful enough to guide students when and how to use which (online) tools for effective language learning". In

short, whatever technology is available out there, it is just a tool to assist teaching and learning. Teachers and students should be well educated and trained on how to make use of it effectively and efficiently for better teaching and learning experiences.

2.4 Design-Based Research (DBR)

Several studies (e.g. Amiel & Reeves, 2008; Hramiak, 2010; Reeves, 2006; Wang & Hannafin, 2005) assert that DBR is suitable for the inquiry of best practice or the improvement of practice in educational technology or technology-enhanced learning environments. The choice of this method is suitable due to its characteristics which are pragmatic, interventionist, process oriented, involve contextual practicality and are theory oriented (Design-Based Research Collective, 2003; van den Akker, Gravemeijer, McKenney, & Nieveen, 2006). A DBR study is pragmatic because the focus of the study is always aimed at directly addressing educational issues or at finding ways to improve current practice in education. In this way, a DBR study is expected to have a direct impact on the educational practices of the research sites. To achieve such aims, DBR researchers work in collaboration with local educational practitioners in order to find solutions to the identified educational issues in their current practice or to find ways of improving their practice. The results of the collaboration are then used to intervene in current educational practice. The intervention is intentionally conducted iteratively to find out how it can help improve current educational practices. Therefore, a DBR study is called interventionist.

DBR is process oriented. As stated by van den Akker et al. (2006, p. 5), in DBR, "a black box model of input-output measurement is avoided, the focus is on understanding and improving the intervention". In this respect, DBR researchers concentrate more on the intervention process during the study than on the results of the intervention itself. For DBR researchers, understanding what makes a successful intervention is important because it leads

to the generation of intervention design principles or models which are perceived as even more important than just perfecting the results of an educational practice itself (Design-Based Research Collective, 2003). When making such an intervention and later generating design principles for the intervention one needs to consider the context in which the DBR takes place. Any successful intervention is actually a joint product of design principles and the context. Thus, whatever the intervention, it should be contextual and practical, meaning that it should be easily adapted and applied in that particular context (p. 3). Most importantly, all intervention design efforts should be grounded in theoretical propositions. Also, the results of the intervention, which is intentionally conducted iteratively, should yield design principles that contribute to theory building (van den Akker et al., 2006; Wang & Hannafin, 2005).

Herrington, Reeves, and Oliver (2010) highlight that there are three useful outcomes of DBR: the design principles, designed products or artefacts (e.g. online learning courses, CD-ROM, websites), and societal outputs. According to them, in DBR "the production of design principles to advance both theoretical and practical understanding of the problem area" constitutes the unique characteristics of DBR that differentiate it from other research approaches (p. 180). Van den Akker et al. (2006) call such research-informed design principles the scientific contribution of DBR to better education practices. In addition, the DBR artefacts, which are to be produced at the end of a DBR study, are concrete manifestations of a research contribution to educational practices. Thus, unlike other research approaches, which offer only superficial solutions to educational issues, DBR offers more instrumental ones (van den Akker, 1999). In this manner, DBR directly addresses the educational research issue of educational research having been having a weak link in educational practices (Dörnyei, 2007; van den Akker et al., 2006). Another benefit of DBR is its societal output, which can come in the form of professional development of teachers, curriculum designers, administrators, or whoever is targeted in the research. In short, DBR

provides direct benefits not only to DBR researchers but to all involved in the research context (Reeves, 2000).

To guide a DBR study Reeves (2006) proposes the following model (see Figure 2.6)

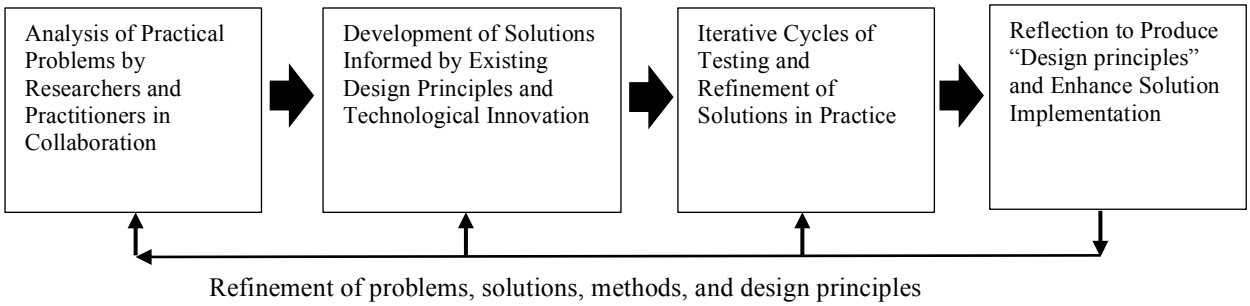

Figure 2.6 Design-based research approach (Reeves, 2006)

There are four phases in the model. Each phase is proceeded in a linear mode, which began by doing the first phase. Herrington et al. (2010) explains that the first phase basically consists of three key processes: (1) identification of a possible educational problem or possible alternatives to improve current practice; (2) involving local practitioners to help understand the context and the possible existing educational problems in the current educational practice on site; and (3) reviewing literature to find out whether similar problems have been addressed or investigated by other researchers. The second phase of the study is dedicated to the development of solutions. Here related literature is reviewed again, and design principles are formulated. In technology-supported educational settings, reviewing the technological affordances is also necessary during this phase, to make sure that they are compatible with the formulated design principles. Once the problems are identified (in phase 1), solutions are designed based on reviewed and formulated principles (in phase 2). In the third phase, intervention to the current educational practice happens. Solutions are tested in iterative cycles, which is suggested to be done in two or more cycles. After the first cycle usually evaluation and then necessary improvement are carried out. Finally in the last phase, researchers are to reflect on the whole process of the previous solutions testing. The purpose

of the reflection is to produce design principles that can be used to inform future development of at least similar educational practices.

2.5 Summary

This chapter has included literature and theoretical foundations that underpin the study. It began by presenting a theoretical diagram of the study to assist readers in understanding the flow of the study. Then a literature review was conducted on training teachers online, in general covering advantages and disadvantages of such teacher training and factors that may affect the implementation of it. After that, the review specifically focused on others' experiences in the implementation of online teacher training. Then, to inform the development of online CALL teacher training in the study, some relevant literature and theories, such as ICT competence standards for teachers, constructivism, adult learning theory, online instruction, online instructional design principles, TPACK and OER, were also reviewed. In concluding this chapter, the literature on the DBR approach was reviewed to help understand the use of DBR and what should be done in a DBR-based study.

Chapter 3 Methodology

Chapter 3 describes the research methodology employed during the data collection and data analysis for the study. The chapter begins by explaining the research design, which is based on a Design-Based Research (DBR) approach. Then, details about the chosen DBR model are further discussed. Following the DBR discussion, the study context where the data are collected is described. Finally, the participants in the research are described. Lastly, the procedure of the data analysis is detailed.

3.1 Research Design

Several studies (e.g. Amiel & Reeves, 2008; Hramiak, 2010; Reeves, 2006; Wang & Hannafin, 2005) assert that DBR is suitable for the inquiry into best practice or the improvement of practice in educational technology or technology-enhanced learning environments. The choice of this method is due to its characteristics, which are problem based, interventionist, process oriented, contextual practical and theory oriented (van den Akker, Gravemeijer, McKenney, & Nieveen, 2006). Interventionist means that the study is aimed at making an intervention into real-world practice where it is assumed that problems exist or where practice is open for improvement. Then, process oriented and contextual practicality mean that the study is mostly focusing on understanding the context and on finding contextually relevant ways to improve the practice on the site. Theory-oriented means that all the interventions made are based on theoretical propositions and should contribute to theory building.

In a DBR study, researchers attempt to seek better alternatives to improve current practice of an education process by investigating any existing potential problems and then working out solutions to the identified problems. However, in case there is no problem

identified, then the focus is to find better alternatives to improve the current practice (Design-Based Research Collective, 2003; Herrington, McKenney, Reeves, & Oliver, 2007). DBR is aimed at making practical and scientific contributions to the field being studied (van den Akker, 1999), and making those contributions directly in the research site by making direct interventions to the current pedagogical practice on the research site. The direct intervention in the research site is the fundamental tenet of the DBR study, which is to provide direct benefits to all involved in the research context (Reeves, 2010). Such direct intervention is also meant to address the perceived issue that educational research may have a weak link to educational practices (Dörnyei, 2007; van den Akker et al., 2006). Through direct intervention, DBR may make a practical contribution in the form of pedagogical practices and professional development activities, as well as research artefacts, which can be in the form of teaching/learning materials. The scientific contribution would be in the form of research-informed design principles for better educational practices (McKenney, Nieveen, & van den Akker, 2006).

The study is underpinned by Reeves' (2006) DBR model (see Figure 2.6). Following the model, the step-by-step process of the study is described diagrammatically in more detail in Figure 3.1:

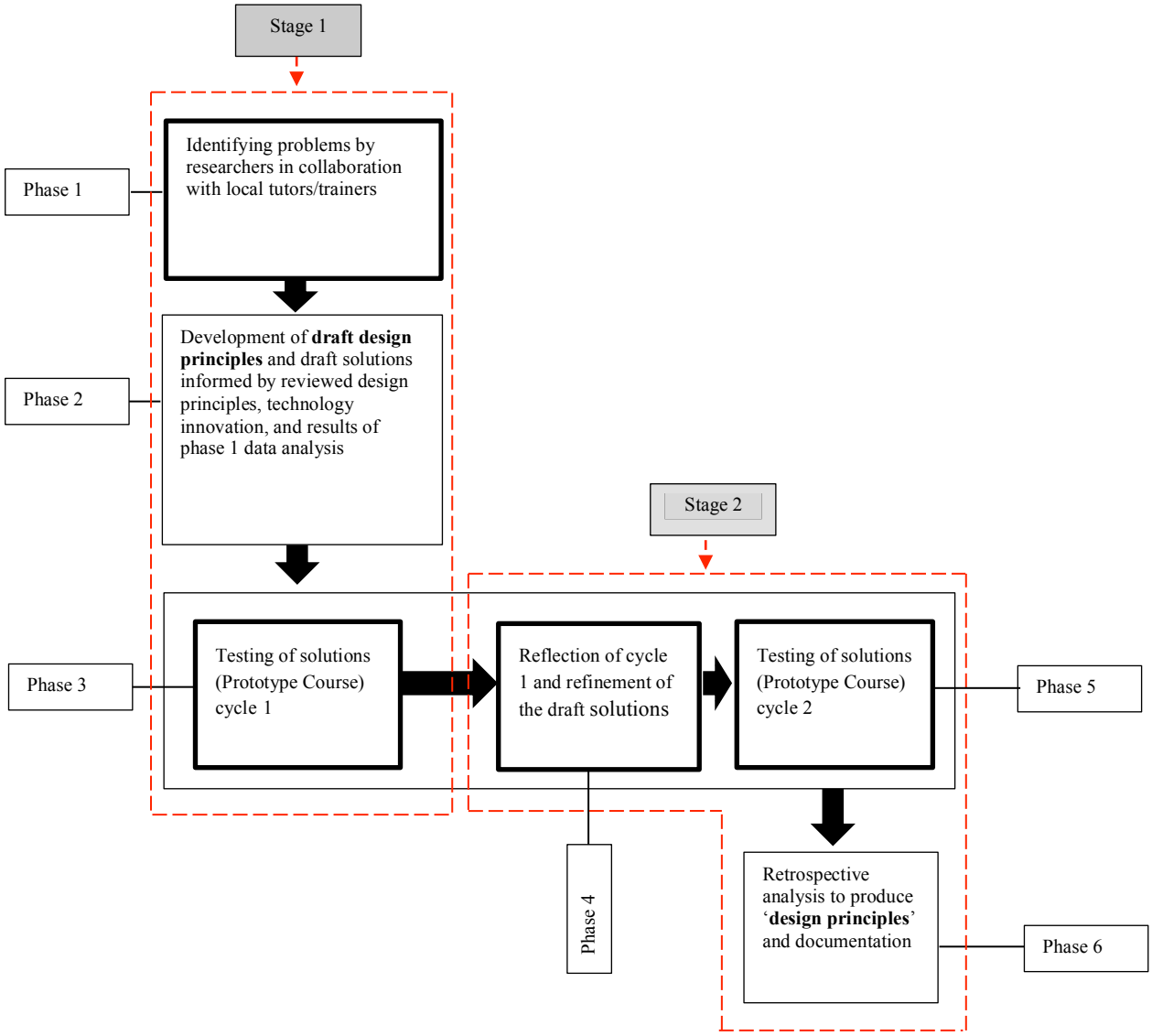

Figure 3.1 The study phases based on Reeve's model

3.1.1 Stage 1

There were two stages in this study. The first stage comprised three phases, which were dedicated to problem identification, development of the online CALL teacher training (OCTT) course design principles, as well as development of the draft solution (Prototype course), and testing of the draft solution cycle one. Stage one of the study was conducted for about 7 months. During stage one the focus was on collecting data contributing to understanding the context of the study as well as the possible existing educational practice problems (Reeves, 2006). Reeves emphasizes that problem identification is an important step in the early phases of a DBR study. During the problem identification phase, data collection

was conducted through interviews, observations, online surveys and document reviews. Detailed description about each phase in this stage is presented below.

Phase 1

During this phase, within one month four types of data collection activities were conducted: interviews, online surveys, observation, and document reviews. Interviews with local tutors and administrators were the first data collection method. The interviews conducted were semi-structured and were guided by a number of sets of open-ended questions (See Appendix A). The semi-structured interview was chosen as an interview approach because of its nature that enables the interviewer to have more flexibility to dig up extended information from the participants based on pre-set questions (Gray, 2013). The interview questions were mostly related to the online learning enablers and disablers that Anderson (2008) argues are associated with technological, individual, support and environmental factors.

The interviews were mostly conducted in mixed languages: Bahasa Indonesia, Javanese, and English. Using interviewees' preferred language was intentionally done to make sure that there was no barrier for the participants to express their ideas or feelings. Though this method of interview may raise questions regarding the reliability of the interpretation, it is believed that as Temple, Edwards and Alexander (2006, p. 4) say, the "researcher is the interpreter and the translator in their analysis". Moreover, the researcher's native language and cultural background is similar to that of the interviewees. Therefore, the analysis of interviews could be relatively easily done. Subtle meanings conveyed by the participants during the interview were relatively easily anticipated due to this similarity in native language and cultural background.

In addition to the interview with tutors and administrators, interviews with students were also conducted to capture more expectations and impressions of the students towards the use of ICT for training and online training, as well as towards CALL. Initially 32 students were invited to take part in the interviews. However, only 25 gave their consent and then voluntarily participated in the interviews. The interviews with them were semi-structured. The semi-structured interviews were not specifically done only in one session but also throughout the implementation of the online course. To make sure that the interviews contributed rich and trustworthy data related to the participants, the interviews were done only at a time of interviewees' convenience, and at places they suggested. Also, to make sure that the interviewees could freely express their thoughts without any external burden, the conversation was conducted as casually as possible with a guarantee that anything they said would remain confidential and no academic consequences would be imposed.

Apart from the interviews, online surveys were also administered (see Appendix B). The first online survey was to identify students' ICT literacy and competency, online learning experience, and perception on ICT use in education, including online learning. Identifying ICT competence and their perception toward the use of ICT in education was seen to be very important because it would be a good indicator of learning intention, future behaviour, and needs related to the successful integration of ICT, which in this case was online training (Hismanoglu, 2012). This online survey was adapted from Son, Robb, and Charismiadji (2011) who previously conducted a similar survey with EFL teachers in Indonesia. Adapting a previously validated questionnaire is believed to save time and resources (Marshall, 2005).

The second online survey (See Appendix C) was to establish the students' perception of the course they had just completed and their own confidence with their learning outcomes. This kind of survey is not meant to evaluate students individually, but instead to get a bird's-

eye view of what occurs within students' learning after the online training. Knowing the general outcomes of the training is seen to be significant to ascertain whether the training in general has met the objectives of the online training as well as to reflect on the materials and performance of the teachers and the online course. Knowing the outcomes helps also to identify possible facilitating and inhibiting factors contributing to the success of the online CALL teacher training.

Then, to further investigate the CALL online teacher training process, a direct observation was also carried out (See Appendix D*)* by the researcher. This observation was actually an ongoing and continuous process throughout the two stages of data collection. Yet, at this very first phase, direct observation was perceived to be important to familiarize researcher with the current process at the research site and thus help the researcher to be more immersed with the teaching/learning process on site. The result of the observation was used to verify the data obtained from interviews, questionnaires and document reviews. The observation was focused on a number of factors that have been identified by various studies as contributing to the success of online training such as support, technology used, course content and activities, learners, and instructors (Anderson, 2008; Bhati, Mercer, Rankin, & Thomas, 2010; Folinsbee, 2008; Hoffman, 2004; Keengwe & Kidd, 2010; Koontz, Li, & Compora, 2006; Muilenburg & Berge, 2005; Park & Choi, 2009) (See section 2.2.3). The observation was overtly done, meaning that participants knew that they were being observed. Realizing that this kind of observation may result in participants' and observer bias, and could be a threat to other participants who may feel obligated towards their supervisor to be available to be observed, the participants were then recurrently reminded of the purpose of the study to build awareness that the study was merely conducted to improve the quality of CALL teacher training in the institution. However, if the observation brought about inconvenience to other people onsite and interrupted their work in the institution, it would

then be conducted covertly, but with a strong commitment to maintaining the confidentiality of the people present there (Gray, 2013).

For augmenting the data collected from other methods, document reviews were done (Bowen, 2009). The documents reviewed were both printed and electronic ones. These documents were written rules and regulations issued by the teacher training college, government policies, CALL teacher training materials, CALL teacher training syllabuses, and journal articles. The purpose of this document review was to contextualize the planned solutions, so that they would be in line with the objectives of the teacher training colleges, government of Indonesia's policy, and with market demand. Reviewing those documents was also meant to unveil directly-unobservable phenomena, and any potential information that can be used to inform the decision making in improving the current practice of the online CALL teacher training or in solving currently existing problems with the training. It was understood that such a document and literature review was a critical and continual process in a DBR study. The literature review facilitated the development of the draft design principles as well as that of the solutions to the identified problems (Design-Based Research Collective, 2003; Reeves, 2006). Table 3.1 summarizes the types of documents reviewed and the purpose of reviewing them:

Table 3.1 *Types of Documents Reviewed*

Types of Documents	Documents to review	Number of Documents	Review Purpose
Policies	College rules and regulations College Curriculum National Qualification Framework (NQF) Government law and Policies	1 1 1 5	To make sure that government's and the college's expectations are met
Course Documents	Course Syllabus and Materials Teaching Journal	2 3 Sets	To become familiar with the course context and culture, to identify potential problems, and to search for chances and possibilities for improvement
ICT for Teachers	UNESCO ICT Competence Framework for teachers (ICT-	1 each	To identify nationally and internationally recognized

Types of Documents	Documents to review	Number of Documents	Review Purpose
Standards	CFT), International Society for Technology in Education (ISTE), International Computer Driving License (ICDL), Indonesian ICT for Teacher Standards, Indonesian national Qualification Framework (NQF), Partnership for 21st century skills standards (P21)		ICT for teachers competence in order to help the development of the CALL teacher training course
Journal Articles	Articles on online training, and technology-enhanced education and training especially for language teachers	78 Articles	To seek samples of best practices on CALL teacher training or online training, as well as possible facilitating and inhibiting factors in online training

Phase 2

Upon completing the problem identification, the following two-month phase was dedicated to analysing the data collected and planning for solutions to be implemented. The solutions were to address possible issues or possible improvements that can be made to improve the practice of the online CALL teacher training. Further details about the data analysis process are located in the data analysis section in the latter part of this chapter. Based on the results of the data analysis, and the literature review on online training, technology enhanced education and training especially for language teachers, and technology innovation, the solutions to existing problems were designed. The design of the solutions were initialized by generating a draft of context-specific design principles which were based on a review of the existing design principles of online training and CALL training. Based on the generated draft design principles, the practical solutions (prototype course 1) to be implemented were developed. Details about the solutions designed are further described in chapter 4.

Phase 3

To find out whether the solutions worked as expected, a four- month trial phase was conducted. In this phase teacher and researcher worked together to make sure that implementation worked as natural as possible. By doing so, all efforts to address problems in

the real context could be ensured in terms of their applicability. During this trial phase another session of data collection was also conducted. At the same time, continuous monitoring and observation of the online training process was ensured to guarantee that all data related to facilitating and inhibiting factors in online CALL training were well recorded. According to Herrington et al. (2007) one cycle of testing in a DBR may not be sufficient to gather enough evidence about the success of the designed solutions. They suggest that at least two cycles of testing should be conducted to have more opportunity to evaluate the implementation of the designed solution and then see how the solution can be improved over the two cycles. Therefore, another testing phase was allocated during the second stage of this study.

3.1.2 Stage 2

There were three main phases in the second stage, which lasted five months. The first one was Phase 4, which was the reflection phase and took place over one month. It focused on evaluating the implementation of cycle one of the testing solution and then at refining the designed principles. During the reflection phase the researcher and the local tutors collaborated to evaluate the process of implementation which was related to the course materials, online training activities, the provision of support, the technology used and students' responses toward the online training. Having reflected on those factors and identified potential facilitating and inhibiting ones, refinement of the previously tried solutions and a draft of online course design principles were almost generated at the same.

After that, in phase 5, the testing of the refined solution (prototype course 2) was conducted for about 4 months. The purpose of the second cycle of testing solutions was designed to find out whether the refinement effort of the designed solutions, which was based on the testing in cycle one, worked well and was acceptable to be adopted in the future online

CALL training at the research site. Finally, during phase 6, all data collected during the previous phases and during the two cycles of implementation were documented and reflected upon in order to refine the design principles and solutions.

3.2 The Study Context

The study was conducted in an Islamic teacher training college (TTCo) under the ministry of religious affairs. This TTCo educates teachers to teach various subjects such as Islamic teaching, Arabic as a foreign language, English as a foreign language, mathematics, science, school management and elementary education. Students/trainees are prepared there to teach or to work in various levels of education starting from kindergarten to high school. In addition to educating the pre-service teachers, this TTCo is also appointed by the government of Indonesia (GoI) to conduct in-service teacher training which assists in-service teachers in their professional development.

This study was focused on a course in one of the departments at the TTCo. The chosen department is the English teacher education department (ETED) offering pedagogy and English language teaching courses. One of the courses in the ETED is the CALL course which is offered in two semesters, CALL section one and CALL section two. This course is aimed at training teachers to have literacy and competence in the use of ICT for language teaching. The purpose is to address the current scarcity of ICT training in Indonesia, as briefly discussed in chapter one, as well as to equip teacher trainees with 21st century technology-supported teaching skills. Through this course the TTCo helps prepare teachers/ teacher trainees to meet the government of Indonesia's mandate requiring them to integrate ICT in their classroom instruction (Kemendiknas, 2007).

The course itself was designed to be an online course but there were three face-to-face (F2F) meetings. This was to address the administrators' requirement which demands F2F

sessions in every course offered. The three meetings were scheduled at the beginning, middle and end of the semester. The objectives of these F2F meetings were set differently for every meeting. The first meeting for example, was dedicated to make a class contract with students and to deliver the course instructors' expectations during the commencement of the course. It was also dedicated to help students understand the features of the learning management system being used. In short this first F2F meeting was to prepare them for the online learning context. The second F2F meeting was held to hear from the students about their online teacher training experiences. In case they had encountered unsolved problems during the online sessions they could bring them to the second F2F meeting. It is understandable that sometimes students do feel much more comfortable to communicate F2F. Therefore, the second meeting was aimed at giving opportunities for students to directly express their unsolved problems with online learning or their special requirements, if any. This F2F meeting functioned at the same time as a medium to build better rapport with students (Harmer, 2007). The last meeting was aimed at exploring similar themes as the second meeting, and this meeting was a good evaluation session for both tutors and students of the online training experiences that they had been through during the semester.

3.3 Participants

Design-based research is not research that can be conducted in isolation without it involving practice in natural settings and people being involved in it (Reeves, 2006). In this study, therefore, there were three groups of participants who were directly or indirectly involved in the practice of online CALL teacher training. The first group consisted of tutors. There were three CALL tutors who were contacted and were willing to participate in the study. No other tutors than those three taught CALL on site. Overall, only one tutor was available to collaborate in delivering the online call teacher training course. The tutors were the main research partners with whom the researcher worked closely to identify current

problems in the practice of online CALL teacher training at the research site and to find ways to improve the existing CALL training practice there. The second group was administrators, namely three academic administrators and one ICT administrator. The academic administrators were decision makers in the TTCo. There were a number of administrators but only those who were available to participate and give their consent were invited to work with the researcher.

The third group consisted of students studying at the ETED. These students were either in their 6th semester or 8th semester of the 8-semester program leading to a bachelor's degree in teaching English as a foreign language (TEFL). There were three groups of students participating in the study. The first group of students had completed the CALL course in the ETED prior to the commencement of the study. The second group of students were 35 students enrolled in the CALL-1 Course. The third group of students were 26 students who enrolled in the CALL-2 course and joined the second group of students during the CALL-2 Course.

For the complete summary of participants involved in each process of data collection see Table 3.2

Table 3.2 *Number of Participants in Each Session of Data Collection*

		Stage 1			Stage 2	
Participants	Interviews	Surveys		Testing cycle 1	Testing cycle 2	Survey
		1	2			2
CALL Tutors	3	-	-	1	1	
Administrators	3	-	-	-	-	
ICT Admin	1	-	-	-	-	
Students	15 (Focused group interview)	70	32	35	61	62

Note. Survey 1 is about students' online learning experience and ICT knowledge and experience. Survey 2 is a post online CALL training survey

3.4 Data Analysis

Data analysis in DBR is an iterative process that happens during each stage of the study. It is a crucial part of the continuous cycles of the design, trial, analysis, and redesign process characterizing a DBR study (Design-Based Research Collective, 2003; Herrington et al., 2007; Wang & Hannafin, 2005). There are two phases of continuous data analysis that were done throughout each phase of the study (see Figure 3.2 below). The focus of each phase of the data analysis was also different. The Phase 1 data analysis of the DBR study was mostly focused on data that contributes to the understanding of the context of the study as well as the possible existing educational practice problems. The results of the analysis were used to address the research questions 1 and 2, while data analysis during the second phase was focused on the prototype characteristics and teacher trainees' interactions during the online CALL teacher training course (Reeves, 2006). The results of the second phase data analysis were then used to address research question 3.

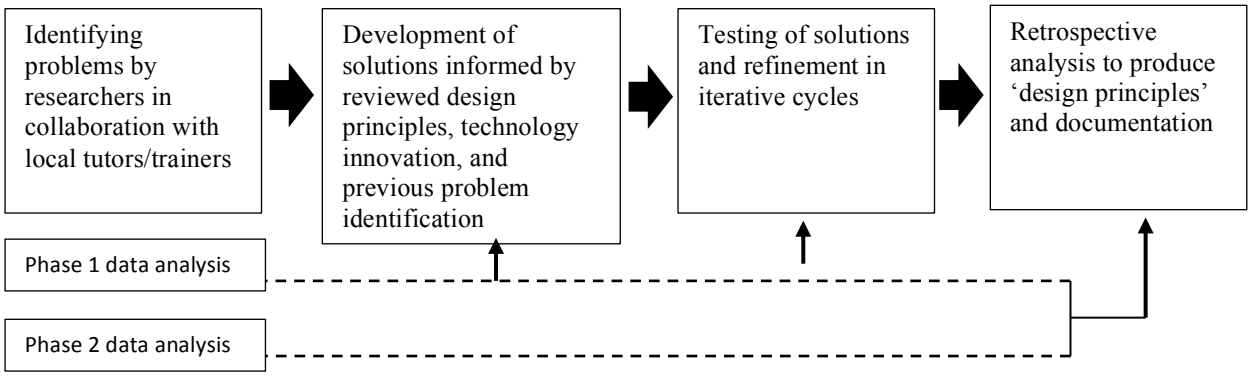

Figure 3.2 Data analysis phases

3.4.1 Phase 1 data analysis

The data obtained were analysed through procedures which are based on Bowen (2009). The data analysis procedures were aimed at interpreting data through stages of eliciting meaning, gaining understanding, synthesizing data and developing empirical knowledge (see Figure 3.3)

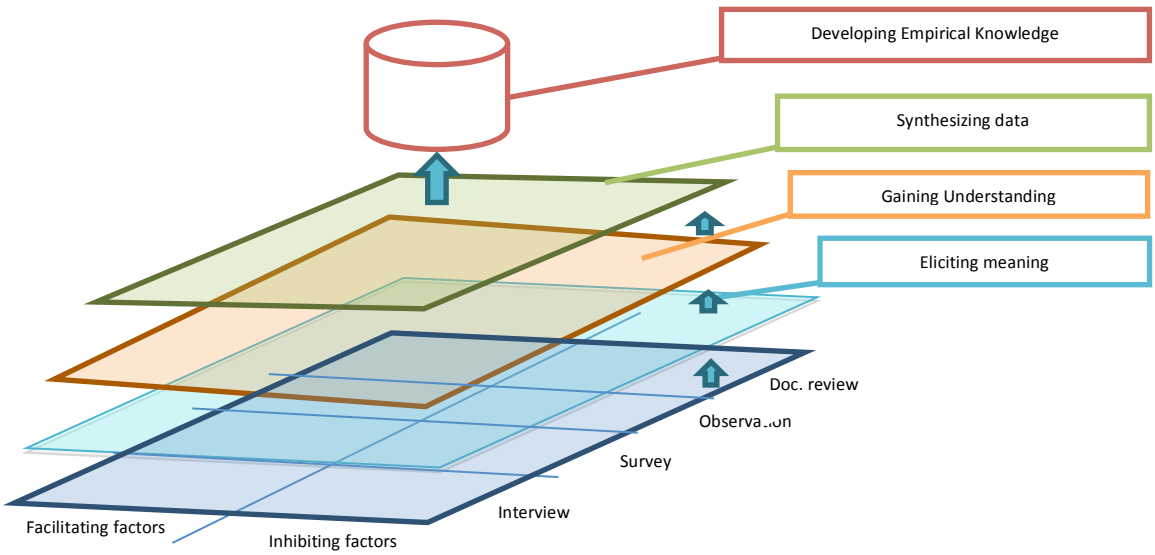

Figure 3. 3 Data analysis procedure based on Bowen (2009)

Following the procedure, a more detailed step-by-step analysis process was conducted. Subscribing to Creswell (2012) and Miles and Huberman (1994), who argue that there is no fixed and off-the-self data analysis procedure for a study mostly exploring qualitative data, the step by step data analysis strategies were tailored in such a way that they met the objectives of the study. Table 3.3 shows the overall description of the data analysis strategies.

Table 3. 3 *Data Analysis Strategies*

Data source	Analytic strategies	Purposes
1. Interview data	a. Transcribing b. Identifying codes c. Reducing and categorizing the codes d. Summarizing e. Relating categories to framework in literature f. Sketching ideas on the summary	Identifying practical problems Identifying factors affecting the online CALL teacher training Observing possible improvements
2. Observation data	a. Taking field notes b. Sketching ideas on field notes	Analysing practical problems Observing possible improvements
3. Survey	a. Counting frequencies b. Displaying findings in tables and charts	Analysing learner-related practical problems Observing potential and possible improvements
4. Document reviews	a. Sketching ideas for solutions to identified problems	Identifying possible applicable online practices/solutions to identified problems

To assist in data analysis a computer-assisted data analysis tool, NVIVO 10, was utilized. Data obtained from interviews, surveys, observation field notes, and document reviews were imported into NVIVO. By using NVIVO as a tool, the above mentioned analysis procedures (Figure 3.4) were carried out. First, to elicit meanings from the obtained data, files for the data were created and organized. Then, thorough and iterative reading processes of the collected data were performed. Second, to start gaining understanding of the data, a systematic coding was implemented. The coding was based on previously reviewed extant literature on factors facilitating and inhibiting online training as well as best practices on online training and ICT in language teaching. The coding was to identify the prefigured topics which were based on extant literature such as support, technology used, course content and activities, learners, and instructors. The topics for coding, however, were not limited to those mentioned but instead were left open to emerge flexibly, based on the data collected. Following the coding process was used to describe the events, experiences, and context of the study, and to then aggregate possible larger themes or to identify potential patterns in the data.

Once all the data were coded and described, and larger themes were identified, they were interpreted by synthesizing all data and information collected. The interpretation of the data eventually culminated in the formulation of principles for designing online CALL teacher training and the improvement of practice in the current CALL teacher training course. These principles were then used as reference to develop an online CALL teacher training prototype which were then used as solutions for the identified problems at the site. All findings of the study were later described to ultimately present new empirical knowledge of online CALL teacher training design and practice in the Indonesian context.

3.4.2 Phase 2: data analysis

As mentioned previously the data analysis for stage 2 of the study were focused on the prototype characteristics and user interaction (Reeves, 2006). The analysis of these two foci was used to address research question 3. In this second phase data analysis, some factors pertaining to the characteristics of the online CALL teacher training prototype were analysed. Those factors are listed in Table 3.4 below.

Table 3. 4 *Factors Pertaining to the Characteristics of Online CALL Teacher Training*

Categories	Factors
Course	Curriculum design Pedagogical model used Content Teaching learning activities Availability of resources
Technology	Access to prototype Software and interface design Costs
Support	From faculty From teachers From their peers From family
Learners	Motivation Time allocation Confidence Learning Style Gender
Instructors	Technology confidence Learning new materials Motivation and commitment Qualification and competence Time

Note. Based on Anderson (2008), Bhati, Mercer, Rankin, & Thomas (2010), Folinsbee (2008), Hoffman (2004), Keengwe & Kidd (2010), Koontz, Li, & Compora (2006), Muilenburg & Berge (2005), Park & Choi (2009).

Analysis of the second focus, which was user interaction during cycle one and cycle two of the implementation of online CALL teacher training prototypes, was informed by the work of Son (2006) who analyses online learners' interaction based on online learners' participation frequency and message types during online sessions of CALL teacher training courses. The students' online messages were analysed based on Garrison, Anderson, and Archer's (2000) categorization of online presence namely teaching presence, cognitive

presence, and social presence. The results of the analysis were interpreted and synthesized with other findings during the study to help understand the factors affecting the online CALL teacher training, and how such training could be improved.

Lastly, it was understood that in any study there is always a possible threat to validity in terms of any conclusions drawn (Trochim, 2006). To enhance the validity, therefore, more sources of evidence are necessary to support the result of the study (Redmond, 2011, p. 83). Therefore, in drawing any conclusions during the study, corroboration of evidence from various different individuals (administrators, student teachers, and instructors), types of data (observational, surveys, and interviews), or methods of data collection (documents and interviews) was made (Creswell, 2012). The results of the study may not be generalized to all contexts of online CALL teacher training. However, any online teacher training context sharing similarities with the one in this study, especially those teacher training institutions in Indonesia, would likely have no problem in adopting and implementing the results of the study.

3.5 Ethical Consideration

Prior to data collection, similar to other research involving humans, an ethical clearance was sought from the University of Southern Queensland ethics office. Approval from the rector of the institution where the study was conducted was also sought in order to gain access to the study participants and as a part of the requirements to get the ethical clearance. Once the USQ ethics office granted the ethical clearance, the data collection process was started.

All participants were approached and consent forms were presented to them. The participants were informed that their information will be treated as confidential and they had the right to withdraw their participation in the study at any time without any consequences.

For taking part in the online surveys, participants' informed consent was presented at the beginning of the survey. They were informed that if they accept to participate in the study, they just need to fill out the online survey form via their Internet browsers and click the submit button at the end of the survey. However, should they refuse to participate they could just leave the online survey and close their Internet browsers at anytime.

Care was taken to ensure the confidentiality and anonymity of the participants. Instead of writing their real names and identities in the study report or any publication resulted from the study, pseudonyms were used to refer to the participants.

3.6 Summary

This chapter has presented the design of the study as well as the discussion of why a DBR approach was adopted to guide the study. Data collection methods and data analysis has also been detailed. Furthermore, a description of the context and the participants of the study was provided. Lastly, the issue of validity was also briefly discussed in the last part of the chapter.

Chapter 4 Findings

This chapter presents the findings of the study for which the data was collected through methods presented in Chapter 3. Findings are presented from data collected through interviews, surveys, document reviews, and direct observation. Other findings, related to online discussion, are also presented at the end of this chapter. The findings are used as a consideration in the development of OCTT prototypes as presented in Chapter 5.

4.1 Interviews

The following represents a summary of the interviews with some excerpts from the interview sessions. Each of the interviewees was given the opportunity to explain and clarify their opinions freely and was repeatedly reminded of the aim of the study, which was to find better alternatives to the current CALL teacher training practices. They were also repeatedly reminded that their responses would be kept confidential and that there would be no academic or administrative consequences for them as a result of the interviews. The interviews were semi-structured and therefore, in addition to the set questions as listed in the interview guides (see Appendix A), logical follow-up questions were also posed during the interviews to get richer data. The discussion of the results of interviews in this section is organised based on groups of participants, i.e. local instructors, administrators, ICT administrators, and students. Thirteen themes were identified from the interview results. Figure 4.1 summarizes the themes pertaining to each group of interviewees. Each theme is elaborated on in the following sub sections:

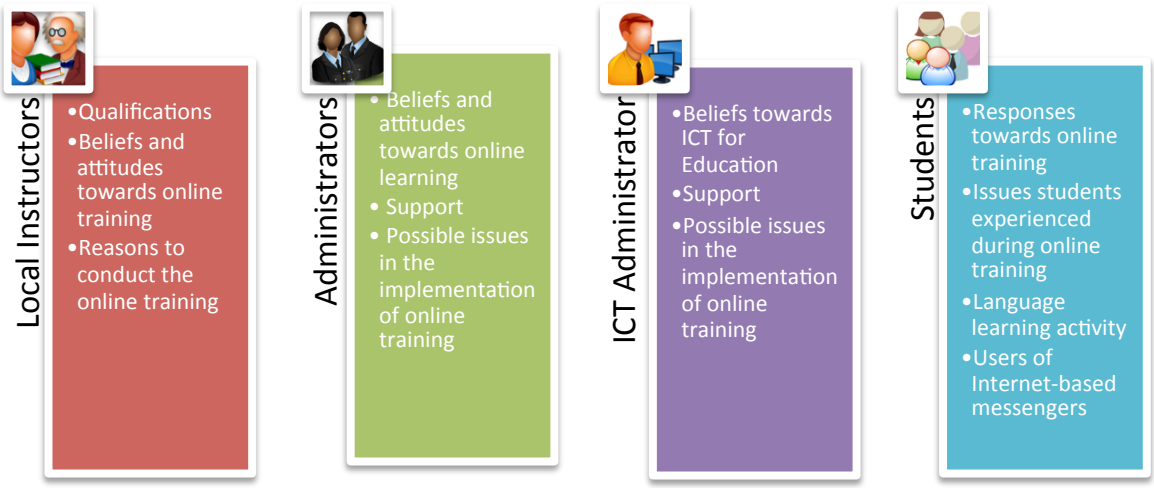

Figure 4.1 Online training-related themes identified from each group of interviewees

4.1.1 Results of interviews with local instructors

Figure 4.2 Online training related-themes from interviews with the local instructors

A few ideas were raised during the interviews with local instructors. They were separately interviewed and they responded well to the questions with online-training related themes. See figure 4.1 for a summary of the themes discussed in this sub-section. It is important to note that all instructors were aware of their students' general ICT knowledge and skills, which according to them were already at the functional level to perform tasks such as file management, software installation, word processing, spread sheet making, internet browsing, and various forms of computer-mediated communication such as email, online chat, social media etc. Thus, they said that they were not particularly worried about getting students to work with ICT-supported assignments.

Qualifications

The three instructors were computer literate and had good knowledge of, and skills and interest in ICT use in education, with various educational backgrounds. Regarding the CALL course, at the time of the study, they said they had been assigned to teach the course for less than two semesters. One of them said he had been teaching CALL for one semester while the other two instructors had been teaching CALL at the research site for about two semesters. See Table 4.1 for a brief description of their CALL-related profile.

Table 4.1 *Instructors' Profiles*

Name	Female/Male	Educational Background	Length of CALL Teaching Experience
Instructor 1	Female	She is a teacher trainer and had been teaching for more than 5 years. She had been doing a blended teacher training courses and had been attending a course designed for teaching online during her Masters study in an Australian university.	1 semester
Instructor 2	Male	He is a teacher trainer and had been training teachers for about 2 years. He had attended a CALL course and some other language teacher training courses, both online and blended, during his Masters study in an Australian university.	2 Semesters
Instructor 3	Male	He is a Cambridge-certified language teacher trainer though his educational background is not mainly in language teaching, but rather in law. He admitted to having a special interest in, good knowledge of, and skills in ICT. He had been teaching in the language teacher training courses for about 4 years. He also had online learning experience with open education providers such as Coursera and EdX.	2 Semesters

In terms of the training activities, the instructors were aware that they were actually still in need of learning how to conduct effective and engaging online teaching and training. They all confessed that one of the issues of online training was that they needed more time to select or to develop engaging materials and activities, to provide timely feedback and to be present more often in the online discussions. The

time related-issues, according to them, was due to their lack of experience in, and knowledge of, online training, especially online CALL training. Though Instructor 3 claimed that he himself had experienced online training for a period of time in a MOOC, he did not show much evidence of providing variety in online activities for his students. All three admitted that they did not specifically use learning management systems such as Moodle, WebCT, or Blackboard, because they did not have any idea of how to start utilising them although they were aware of the potential offered by the tools.

While not for the fully online course or training, they have also utilized a few web-based tools for organising online activities, such as Facebook (http://www.facebook.com) and Edmodo (http://www.edmodo.com). Instructor 1 said "I used Facebook for communication with my students and to have consultations with them". Instructor 2 said "I post questions and have students respond to the questions in a Facebook group I created". Instructor 3 said, "I created an Edmodo account but then I found not many of my students logged in and… moreover they use 'strange names' that I do not really like".

They were all aware that they still needed more training to teach CALL effectively, especially online. Therefore, they had been making an effort to self-develop their CALL related knowledge and skills through reading articles, participating in online CALL discussions, experimenting with various teaching tools and application, and attending workshops on teaching with technology. They realized that they had previously received limited or no CALL-related training. Yet, they showed a keen interest in technology-assisted teaching such as CALL. They also had strong and positive beliefs and attitudes towards e-learning. All of them expressed positive views about online training being a mode of the teacher training that would be happening in the future.

Beliefs and attitudes towards online training

Instructor 1 believed that it was imperative that students be trained in CALL during as part of their teacher training program. She argued that students already live with technology, and therefore they need to be well-guided and be given examples on how to use it wisely for education. She said:

> Actually teaching CALL today is just like teaching something which is a must…to direct students. Because students have been familiar with technology and especially the Internet and…technology is just like their daily toys… They have been familiar with laptop and many kinds of new software… that very often… they learn them in no time. So it is the time to give them direction on how to use technology (in this case CALL) for teaching. (Instructor 1) - Excerpt 1

She also stated that she was still new to CALL and therefore kept upgrading her CALL knowledge and skills, which were still very limited due to lack of relevant CALL training in the past. Instructor 2 who had attended a CALL course during his Masters study said:

> Ummm…. I believe that online CALL training is positive (now and in the future). At first, it is because online CALL teacher training is time efficient….student teachers do not need to come to school just learn or listen to teachers' lecturing…So they can use their traveling to school time for other study purposes or for doing other things. Secondly…it is more practical I believe, and learning materials can be easily distributed and richer. Although…there might be problem if we implement the online training today in Indonesia such as internet connection problem…but generally online CALL training is the future form of training…ummm… it will happen and we have to prepare for that. (Instructor 2) - Excerpt 2

Instructor 3 even enthusiastically suggested that ICT training for student teachers is a must. For language teacher training especially, he said "it is the time to start the online CALL training". He argued that because ICT infrastructure had been in place and students are very technology-proficient, guiding students to wisely integrate ICT in education is necessary. He further explained that today most students are active users of ICT products, both hardware and software. They are very much dependent on

ICT today, as can be observed from their daily use of mobile devices such as smartphones, tablets and personal computers for various different purposes such as communication, socialising, working on assignments, handling their daily business, shopping, and other work-related tasks. He then expressed his positive view on online CALL training by saying:

> I believe the future of on online training, in this case CALL teacher training, should be started now…We should be thankful that students are tech-savvy today. We also have infrastructure that support …online training…and one more thing with online teacher training…student teachers would certainly be able to learn anytime anywhere and … I can see that because of that flexibility, students prefer online learning. And for instructors…they can have good quality materials to share with students by selecting from abundant sources of teaching materials accessible in the Internet, though… of course online teaching require them more serious and time consuming work at the beginning. (Instructor 3) - Excerpt 3

Reasons to conduct the online training

Despite their limited experience and skills with online teaching and learning, the local instructors seemed to be very motivated to conduct the online training for their student teachers because they realized that online teacher training offers flexibility not only for them, but also for their students. They were aware that by making use of the online technology for training CALL, student teachers would directly experience learning with technology. Thus, training would no longer be just face to-face and one-way communication lecturing. Yet, training would be experiential and technology-supported learning through activities done by both students and teachers. By making use of online technology for CALL training, all the instructors believed that abundant quality resources were available and accessible on the Internet. Online available resources, in the form of text, images, video, and animation. They also believed that online resources would certainly be much more interesting to students and might motivate students to learn. In addition, by making use of the

available online digital educational materials, widely known as OER (see also section 2.3.2), students and instructors can easily save or retrieve the materials anytime and anywhere. Instructor 3 commented as follows:

> Materials in the online environment are easily accessible and of various formats. We can easily make use of them. For free materials that I can save on my laptop…I can easily find it and share it with students…The materials …which are in various formats such as in a streaming video format for example… helps not only me but also students to understand well certain topics being discussed in class …So what is good about the online material is that the materials are there and ready to use….Video materials like in YouTube can be a good and motivating teaching aid for me. For example. When I and My students want to know about how to use Hot Potatoes… What I do is guide them to find the tutorials in YouTube. So… in that way they know how to search for information and at the same time also get the intended tutorial…easy right. (Instructor 3) - Excerpt 4

Students' administration and statistics can be done within the learning management system used in most online teaching environments. Through online teaching, accordingly, teachers can carefully monitor and keep track of their students' performance. Another reason that made the instructors believe that online CALL training should be implemented, was that it would guide and facilitate students to access self-directed professional learning or development resources. Later in their career, students would therefore know that they can always access flexible, sustainable professional learning. They were made aware during the online training process that in the online environment they are not alone and asking for help from experts is just a click away.

With regards to self-directed professional development, Instructor 3 specifically said that he equipped his student teachers for their future professional development with practical ideas on how to keep developing themselves during their careers. He said:

> Online materials and online tools are easily accessible for teachers…online teacher forums for example…we can easily use them for our own learning…I specifically take this as opportunity for me to learn and then... I alert students

about these resources and teach them how to use the resources for their future professional development. (Instructor 3) - Excerpt 5

4.1.2 Results of interviews with administrators

This is a summary from the interviews with instructors. Ideas discussed in this subsection are based on themes listed in figure 4.3

Figure 4.3 Online training related-themes from interviews with the administrators

Beliefs and Attitudes towards online learning

The two administrators interviewed were decision makers at the teacher training college. Both were very cooperative during the interviews and showed a strong interest in the study. Administrator one who had been working in the English language teacher training area for about 5 years, showed an interest in the ICT-assisted teacher training including the online teacher training, as evidenced from her statement quoted below:

> …because with technology education is relatively accessible from anywhere and anytime. So, online teacher training is an alternative way to pursue better education. I strongly believe that in the near future more and more people would do the teacher training online. (Administrator 1) - Excerpt 6

Administrator 2, who had been working on the teacher training area for more than 10 years, also expressed her conviction about the feasibility of online training in the institution. She said "I have no objection with online teacher training…it is a good innovation. I would certainly support and recommend it if it is well-designed with clear and achievable objectives."

Both administrators said that since the college has been very experienced in delivering distance education and training for in-service teachers, bringing distance training experience to the next level, in the form of ICT-assisted distance training, would certainly need further

exploration and better preparation. Therefore, they supported the idea of the study which is to develop an online CALL teacher training course. They agreed that an implementation of online teacher training should be conducted soon. Accordingly, the findings of the study should then later be able to be used to inform the development of other online training course initiatives at the college.

The administrators were aware that the ICT facilities at the college were in place and were ready for the implementation of online teacher training. Administrator 1, for example, mentioned that the "internet is everywhere today and is cheap. Even free on campus. So, access to online facilities is no longer a big problem…so yes...we can do it (online teacher training)". Administrator 2 said that "we have the experience of distance teacher training…with that experience and the mastery of today's technology, we may need at least 5 years to completely go online". Therefore, both administrators agreed that online teacher training should be pioneered soon. They emphasized that upgrading the staff's (academic and administrative) ICT knowledge and skills as well as online pedagogical knowledge and skills should also be arranged. As a result of this upgrading, it was expected that they would be more prepared to assist in the process of online teaching and learning.

Support

So far the institute had been making an effort to upgrade the staff members' ICT knowledge and skills, due to a government and current work requirement that forces the institute to use ICT in managing it, as well as in its teaching. Some effort to upgrade staff's ICT knowledge and skills had been conducted in the form of workshops and short training sessions. Yet, ICT-assisted pedagogy training had not been conducted, especially as it relates to online training. Most instructors in the institute were reported as teaching themselves how to use ICT in their teaching duties.

Interestingly, when informed about the study and possible training or workshop to upgrade staff members' ICT knowledge and skills as they relate to pedagogy, both administrators asserted that the idea would be supported and facilitated.

> We will support the idea (ICT-related workshops) by providing necessary facilities, funds, and any other supports needed. We will be more than happy to collaborate with anyone willing to develop ICT-assisted teaching and learning in this department. We will welcome those who would develop online teacher training in our department because we believe it would also bring about benefits to our staff and course development in our department. (Administrator 1) - Excerpt 7

Both administrators realised that ICT is currently increasingly used in a global context and that more and more people have made ICT a prerequisite to be able to take part fully in contemporary society. They agreed that ICT offers potential for better teaching and learning processes if it is used properly. Therefore, they welcomed the idea of delivering teacher training online, especially if it has a positive impact not only on students but also on staff and if it contributes to the development of courses in the institute.

In short, facilities, staff, modules, and online teaching scenarios should be well prepared and integrated to support one another. Such integration would help to provide adequate support to the process of online training, and especially online learning of the students. Students could easily get help whenever they would need it because there would be many people in the institute that they could consult with whenever they experience online learning difficulties. So, "Imagine if the people in the institute at least in the department know nothing about ICT and online training program" Administrator 2 said, "Students' questions would fill up instructors' inbox because there would be too many of them addressed to the instructors, and instructors would be just too busy to explain things which can actually be explained by other staff and not necessarily by him". Administrator 1 suggested that support is actually very important in online teacher training. So far, though not specifically intended for online training, social media managed by the department has been

very effective in providing information and support to students. If at a later stage online training is being widely used and accepted, Administrator 1 said "staff members can make use of that social media for communication to provide support to students and everyone involved in the online training."

Possible issues in the implementation of online training

When asked about some of the online training that had been pioneered by a number of instructors in the institute, the two administrators mentioned a few obstacles that should have been anticipated by online instructors. One of them was the honesty of the students; they suspected that many students, especially those who were in-service teachers and were in high ranking positions, would perform dishonestly while learning online. They could ask their subordinates to do their class assignments for them. Those who were not very ICT literate could also ask their friends to do the online assignments for them. Such possible dishonesty should be well anticipated. The second obstacle that should be of concern is the availability and quality of the module presented to the students. "The not-well-prepared module will not teach students much and will possibly discourage them to learn online" said Administrator 2. Also, the internet connection should be well considered since it may discourage students whenever they have problems accessing the materials online due to a bad internet connection.

To conclude, both administrators showed positive attitudes towards the implementation of online teacher training and were willing to facilitate online teacher training ideas. This was of course valuable in the online CALL teacher training that was started as part of this study. Their willingness to facilitate online teacher training plans as part of the study has helped in disseminating the results of the study throughout the faculty, as they relate to teacher training in the institute, and in making online CALL teacher training sustainable as well. Thus, the online CALL training idea realized in this study will not just be

a short and non-sustainable program that yields nothing and is only for the sake of the completion of the PhD study, but rather has significant ongoing value beyond this study.

Figure 4.4 Online training related-themes from interviews with the ICT administrator

4.1.3 Results of interviews with ICT administrator

Few ideas were summarised from the interview with the ICT administrators. Discussion of those ideas will be organised in the order of themes as listed in Figure 4.4. The ICT administrator interviewed was the head of the ICT department who had a communication studies background. He showed good ICT knowledge and skills as well as interest in ICT integration in education. One of his main portfolios so far had been pioneering initiatives among faculty staff members to improve their ICT literacy. Judging from the interview with him, there had been serious efforts within the institute to intensively integrate ICT in the teaching and learning process, including in facilitating the development of online teaching in the institution. Yet, there were still some issues that needed to be addressed to better develop the ICT-assisted teaching in the institution.

Beliefs about ICT for education

According to the ICT administrator, ICT team members always have positive beliefs and attitudes towards the idea of ICT-supported education, especially online education. They are always willing to assist in dealing with the technical aspects of whatever ICT innovation local instructors want to implement in their class instruction. However, due to a limited number of team members, instructors often cannot help the instructors effectively. He agreed that online training, especially in the teacher training faculty, should be well promoted. Also,

he recommended that "There should be clear and directive policy and regulation that govern the implementation of the online training". He had been observing in the institution and felt optimistic that online training would motivate local instructors to perform better in their teaching. He said:

> Online teacher training does not only bring about positive impact on their teaching performance but also forces the instructors to be more prepared in teaching and in providing materials. Thus, their work performance, achievement, and process will also be more systematic and well documented - Excerpt 8

He also confirmed that generally most instructors in the institution showed a high interest in the use of ICT in their teaching, including the online training. He explained that most instructors were aware that through online training, they would be able to reach wider audiences located in various different places, to work anytime and anywhere, to make use of abundant materials from different parts of the world, and to experience many more advantages of online training. To achieve all those advantages however, they need to be prepared and to be trained in ICT use, especially with regards to conducting online training. He strongly recommended that adequate training for them should be well designed, implemented and be intensive. Also, the training should not be about the technical aspects only but also about pedagogical ones. He said "Training technical aspects can be done in short time, even in one day. But…what is difficult and takes time is to train pedagogy".

Support

The ICT team has been actively facilitating training in the use of ICTs for classroom instruction so far. They have also been regularly and intensively conducting ICT training to upgrade staff members' and new students' ICT skills. However, that training is still not enough, and more focused training and course-based training is preferred by instructors on campus. Thus the training should directly address the needs of the instructors in the

classroom. Actually, according to the ICT administrator, developing ICT-assisted training is not really a problem in terms of the facilities, as the institute has set up up-to-date hardware and software and has allocated a reasonable amount of resources to do so.

> ICT facilities are not a problem, our ICT facilities are more than enough to support the ICT assisted teaching such as online training… No problem with the facilities. We support all ICT needs. The internet budget in 2013 is allocated about Rp. 950.000.000 and for 2014 is allocated Rp. 1.500.000.000 only for bandwidth expenditure - Excerpt 9

The institute has also pioneered working with Google to get support in the provision of cloud computing and software for education since 2013. While the online training started two years earlier, online training was still limited to only providing materials on web blog. Ironically, not many activities seemed to have happened in the institution-provided blog spaces since then. Since there has not been any focused training for instructors on how to deliver online training, not many of them have implemented online training. Without mentioning the exact number of instructors in the institution, he said not more than 10% of the instructors used the online training mode. Even those implemented the online teacher training did not fully deliver the training online but only added a few online activities such as submitting assignments via e mail, downloading course materials, and very short discussions on social media. These kind of activities were intended to give students the experience of ICT rich learning and online training.

Possible issues in the implementation of online training

Besides the lack of relevant online training experience of the instructors, there was another obstacle that caused online training not to be widely implemented across campus. The obstacle was the absence of clear and guiding regulation from the institute management regarding the online training, as well as management's requirement for students and instructors to have face-to-face meetings. In other words, students' physical attendance in the

class was still required even though GoI regulation actually allows ICT-mediated distance training. In addition, culture and habits of both teachers and students were still major obstacles to the implementation of online training. They were still reluctant and uncomfortable to learn without the presence of both parties. Social and physical interactions during the learning process were still perceived as necessary requirements for successful learning.

According to the ICT administrator, both students and teachers still felt and thought that direct visual contact with communicators in the class, and also immediate responses during such contact, were important and meaningful feedback, resulting in satisfaction in the learning process on the part of the learners. Further he explained that students and teachers were still accustomed to the thought that direct face-to-face communication enhances their communication through gesture, facial expression, and intonation. He then said "They can feel the warmness of being in a social context during the direct physical communication in the classroom. That is what they always want and expect in a teaching and learning process".

Though admitting that knowledge about the staff members' and students' ICT competence was important, no effort had been made by the institute to investigate their ICT competence. Therefore, there was no data yet available about the ICT competence of the staff and students in the institute. However, based on general daily observations, he suggested that students seem to be much more ICT competent than staff members (administrative and academic). ICT use by students, for communication and to access the institute's web site and students' academic information, is increasing day by day. Students' dependence on campus wide wireless internet access also shows an increasing trend.

4.1.4 Results of interviews with students

Figure 4.5 Online training-related themes from interviews with the students

From the interviews with 25 students, few facts related to online training were revealed. In this subsection the facts are discussed in the order of themes as listed in figure 4.5

Responses towards online training

All students agree that the OCTT has given them new experiences in terms of learning with technology. Many of them mentioned that they were very excited when learning new technology that can be used for learning or teaching. In agreement with many of his peers, one of the students said:

> CALL is really interesting to me because of new things that I have never expected before such as creating a reading exercise using HotPotatoes, or reading materials using Comic maker. Also, things that actually around us and we use them often but we never realize it to be useful for learning and teaching… such as Google Drive, YouTube, Facebook etc…which are useful for collaborative writing practice - Excerpt 10

To most of them the OCTT was found to be enjoyable and flexible in terms of time and place. They can schedule their own learning time as well as discussion time with their peers anytime they wish. On the other hand, a small number of (6) students said that they were confused because of the materials, which they considered too much to read. Bad internet connections sometimes spoiled their mood and concentration to learn online. Others agreed when one student said:

> …well online learning makes me feel sad and happy... it makes me happy because I don't have to physically come to class…but sometimes it makes me upset because of the slow Internet connection and the deadline of assignment submission is approaching - Excerpt 11

Another interesting aspect revealed during the interviews was that students worked collaboratively to solve problems related to either the technological challenges they faced during their online learning or with the assignments. They felt happy learning collaboratively in groups. According to them working in groups was fun because they could actually feel that they had friends, even when they engaged in online learning and no one was physically present near them. However, they also expressed boredom because of working with the same peers in the same groups many times. For that reason they expected to have different groups for different assignments.

Only six students mentioned that they actually preferred face-to-face learning. However, they agreed when their peers said that it was because online learning was still relatively new to them and therefore they were not used to it yet. They mentioned that they preferred face-to-face learning because they could easily ask questions whenever they felt unclear about a particular aspect and instantly received responses either from their peers or from their teachers. Addressing this issue, an idea was mentioned during the interview to provide an online chat facility during the online learning process. The online chat facility would accommodate those who feel in need of immediate help or responses.

Issues students experienced during online training

In addition to the need for immediate responses, students also mentioned some issues they experienced during their online learning experience. For example, slow internet connections were mentioned by 23 students. The time difference became an issue once due to incorrect time zone settings in the LMS server, which is located in the USA. This caused students to fail in submitting their assignments on

time. Besides, the time allocation for each assignment, which was considered by the instructors to be enough, was complained about by students as not enough. They said that they had to rush to finish the assignments. However, when it was cross-checked with the students' online logs in the LMS, it was found that those students complaining tended to work on the last one or two days before the deadline. Therefore, unsurprisingly they suffered from time shortage in working on their assignments. This issue was then clarified during the interviews with them, and they admitted that actually it was their time management that should be improved. They also admitted that this fully online learning experience was new to them and therefore, they needed some time to get used to it. In addition to the time-related issues, other issues encountered by students were technical ones such as compressing file sizes, taking screenshots and connecting to the wireless local area network. However, they mostly solved these issues by themselves through trial and error, searching for solutions online or consulting with their peers. In short, no serious technical issue was revealed during the interviews.

Language learning activity

Most of the students claimed that they read and wrote extensively during the online training. These online reading and writing activities forced them to engage in English. Fortunately, they were happy for the authentic opportunity to communicate in their target language, namely English. They admitted that they felt very enthusiastic in using English in online communication because they did not feel afraid of making mistakes when communicating with others, even of mostly in writing mode, because they had ample time for editing their English sentences before eventually posting them in the online forums.

Users of internet-based messengers

Students in the OCTT were also found to be very committed users of internet-based chat messengers, which they accessed from their mobile devices. They use chat messengers for their daily communication and for their discussions during their work on school assignments as well. They mostly had installed two or three internet-based chat messenger clients in their mobile devices such as Blackberry, WhatsApp, Facebook, Line and Google Messenger. They were also found to be familiar with group chats on the messengers they used in their daily social activities.

Interestingly, in an interview at the end of the course, students all replied "yes" loudly and convincingly, when they were asked whether this online course experience met their expectations. Eventually, when they were asked to describe their OCTT experience in two words they mentioned the following positive words: interesting, amazing, new, meaningful, good, wonderful, and sophisticated. However, they also mentioned some more negative words such as confusing, difficult, burdensome, busy, and difficult. Those adjectives surely imply what they feel and what they expect from a learning experience. Thus, taking those adjectives into consideration when refining or developing the OCTT course would be helpful, especially in order to meet the students' learning needs and learning wants.

4.2 Survey

4.2.1 Survey Objectives

In addition to the interviews, an online survey was conducted, to get even more input about the general perceptions and backgrounds of the participants in the CALL course. In this survey a variety of information was gathered from the respondents. This information ranged from demographic information, computer skills, knowledge and experience, beliefs about the

use of computers for learning, attitudes towards the use of computers for learning, how they get support during online learning, various problems encountered during online learning, and motivation for online learning. The information is important to get a clear picture of what happens to learners during their online learning experience. The information will later be used to help identify problems that may inhibit online teacher training in the institute. Knowing the problems will also help to plan for solutions that can be taken to influence the practice of online teacher training in Indonesia

4.2.2 Survey results

Below are the survey results organized around the groups of questions listed in the online survey. The results below are data collected from both surveys, pre and post commencement of OCTT. The results are grouped into five categories:

- Demographic information
- Computer knowledge, skills, and experience
- Online learning and teaching experience
- Beliefs and attitudes towards online learning and teaching
- Post training survey

Demographic information

The table 4.2 and 4.3 are snapshots of demographic characteristics of the participants in survey 1 and survey 2.

Table 4. 2 *Demographic Characteristics (n=74) of the Participants in Survey 1*

		Percentage	n
Gender	Female	79.7%	59
	Male	20.3%	15
Positions	Pre-service teachers	91.80%	71
	In-service teachers	8.20%	3
Place of teaching	Kindergartens	1.4%	1
	Primary schools	1.4%	1
	Secondary schools	2.7%	1
	Private language schools	4.92%	5
	Private tutors	47.54%	32

		Percentage	n
	Not teaching/Working	45.90%	34
Average Age		20.79 years old	
Average duration of teaching experience		0.6 years	

From 120 invitations that were sent to the students, only 74 students completed and submitted the questionnaires. Among the respondents fifty nine percent were female. The respondents were in-service teachers and pre-service teachers. The in-service teachers were those committed to teach in formal local social foundation-owned schools, while the pre-service teachers were full time students but they could also work as casual private tutors or in other casual jobs. As indicated in Table 4.1, there were 40 respondents teaching in various educational institutions, while there were 34 students who were unemployed or not teaching at the time of the study. The average teaching experience of those 40 respondents was 0.6 years.

As has been mentioned in chapter 3, the participants in survey one consisted of two groups of students: the first group consisted of students who had done the CALL course, while the second were 35 students who at the time of the study were enrolled in a CALL-1 course. These 35 students also participated in the second survey which was conducted at the end of the CALL-1 course. Therefore, there was slight difference in the demographic characteristics of the participants of the second survey, as can be seen in Table 4.3.

Table 4. 3 *Demographic Characteristics (n=35) of the Participants in Survey 2 Stage 1*

		Percentage	n
Gender	Female	81.97%	29
	Male	18.03%	6
Positions	Pre-service teachers	91.80%	34
	In-service teachers	8.20%	1
Place of teaching	Secondary schools	1.64%	1
	Private tutors	47.54%	5
	Not teaching/Working	45.90%	29
Average Age		20.5 years old	
Average length of teaching work		0.7 years	

At the end of stage 2 of the study (see Section 3.1), another survey was conducted in which the respondents were students enrolled in CALL-2. This group of students comprised those

previously enrolled in CALL-1 and another 26 students who joined the previous group to enrol in CALL-2. This new group consisted of 20 females and 6 males. All of them were full time students without prior teaching experience, except teaching simulation in the classroom, as is required in one of the teacher training courses they have to complete before enrolling in any of these two CALL courses.

Computer knowledge, skills, and experience

Fifty seven (77%) of the respondents had been using computers for more than 5 years while only one (1.4%) respondent had been using a computer for less than one year. All of them had used windows as their operating system (OS), while some have also used Mac OS, Linux, and Android. Table 4.4 summarizes the respondents' experience in using computer and the types of OS they have used:

Table 4. 4 *Types of Operating Systems Used and Duration of Students' Experience with Them (n=74)*

Types of OS	Less than 1 year	1-2 years	3-4 years	5 more years	Response count
Windows	2	1	20	51	74
Mac OS	5	1	0	0	6
Linux	6	2	1	0	9
Android	13	17	4	0	33
Others					

The respondents mentioned various reasons for using computers. All of them said that they use computers for working on assignments, while 30 (40.5%) also use computers for leisure such as for socializing, playing games, browsing the Internet and watching videos. Six (8.1%) respondents used computer for teaching and eight (10.8%) said that they used it for other job-related tasks. Four (5.4%) respondents skipped the question. It is also known that only 58 (78.4%) of them had regular access to a computer and 60 (81.1%) said that the computer they accessed had an Internet connection. Although not all of them had Internet access through

personal computers, they still had access to the Internet via Internet capable mobile devices that were owned by 63 (85.1%) of the respondents.

Regarding computer literacy, 45 (61.0%) claimed that they had good computer literacy, while only 5 (6.8%) admitted that they had poor computer literacy. Table 4.5 summarizes the sources from which they had learned to use computers initially.

Table 4.5 *Sources from which Respondents Learned to use computers (n=74)*

Sources	n	Percentage
Trainer	22	29.7
Friends	18	24.3
Yourself	9	12.2
Family	8	10.8
Colleagues	5	6.8
Books	5	6.8
Other (please specify)	5	6.8
Videos	2	2.7

Table 4.5 indicates that although 22 (29.7%) students learned to use a computer for the first time from a trainer, which might mean in the form of formal training sessions, but students seemed also independent enough to learn how to use computers in more informal ways. This can be seen from the number of students who taught themselves (9/ 12.2%), read books (5/6.8%) and watched videos (2/2.7%) about computer use. In addition, students seemed to learn how to use a computer informally from family (8/10.8%) and colleagues (5/6.8%). Accordingly, more students learned how to use computers informally than from formal sessions.

Regarding the students' Internet literacy, 46 (62.1%) claimed to be good, 21 (28.8%) adequate, and 1(1.4%) excellent, and only 5 (6.8%) felt poor at their use of the Internet. For their use of other computer applications as listed in Table 4.6, the respondents mentioned various levels of comfort, ranging from "do not use" (1) to "very comfortable" (5).

Table 4. 6 *Level of Comfort When Using Computer Applications (n=74)*

Applications	1		2		3		4		5	
	n	%	n	%	n	%	n	%	n	%
Text chatting (e.g. Yahoo Messenger)	0	0	1	1.4	5	6.8	27	36.5	40	54.1
Web searching (e.g. Google, Yahoo, Bing)	1	1.4	0	0	2	2.7	32	43.2	38	51.4
Word processing (e.g. MS Word, Pages)	0	0	0	0	2	2.7	41	55.4	30	40.5
Computer games	1	1.4	2	2.7	13	17.6	29	39.2	28	37.8
E-mail (e.g. Gmail, Hotmail, Yahoo)	0	0	0	0	4	5.4	45	60.8	24	32.4
World Wide Web	1	1.4	4	5.4	8	10.8	35	47.3	24	32.4
Blogging (e.g. BlogSpot, Wordpress)	3	4.1	5	6.8	22	29.7	27	36.5	15	20.3
Wiki	5	6.8	5	6.8	15	20.3	34	45.9	14	18.
Online discussion group	0	0	1	1.4	21	28.4	37	50	14	18.9
Language software	8	10.8	7	9.5	25	33.8	20	27.0	11	14.9
Voice chatting (e.g. Skype)	14	18.9	9	12.2	25	33.8	16	21.6	9	12.2
Multimedia (e.g. audacity, moviemaker)	1	1.4	9	12.2	30	40.5	26	35.1	6	8.1
Database (e.g. MS access)	15	20.3	8	10.8	21	28.4	25	33.8	4	5.4
Graphics (e.g. Photoshop, CorelDRAW)	5	6.8	15	20.3	30	40.5	19	25.7	4	5.4
Spreadsheet	16	21.6	10	13.5	20	27.0	21	28.4	3	4.1
Video conferencing (e.g. Skype)	18	24.3	5	6.8	27	36.5	19	25.7	3	4.1
Concordancer	29	39.2	12	16.2	19	25.7	7	9.5	2	2.7

Note: 1 (Don't use), 2 (Not comfortable), 3 (Somewhat comfortable), 4 (Comfortable), 5 (Very comfortable)

More than fifty percent used applications such as word processing, emailing, graphics, multimedia, language software, blogging, online discussion groups, text chatting, voice chatting, video conferencing, and computer games. Everybody used applications such as emailing, word processing, online discussion groups, and text chatting. Most respondents considered themselves to be comfortable users of online tools such as the World Wide Web, web search engines, blogs, and wikis. By contrast, not many respondents identified themselves as comfortable users of applications such as concordancer (a computer program that can automatically constructs a concordance); only seven (9.5%) participants felt comfortable and two (2.7%) very comfortable. In addition to the level of comfort when using computer applications, the respondents were asked to self-rate their own skills in using a number of computer applications. The results indicated that more than 50% claimed to have either intermediate or advanced skills in operating word processing and presentation

applications. Only one (1.4%) respondent considered herself to not have skills in presentations. There were also respondents who indicated having no skills in applications such as word processing (2/2.7%), spreadsheets (22/29.7%), databases (18/24.3%), multimedia (3/4.1%), web design (18/24.3%), web search engines (3/4.1%) and communication applications (3/4.1%). Table 4.7 summarizes the self-rated computer skills of the respondents.

Table 4.7 *Self-rated Computer Skills (n=74)*

Applications	None		Basic		Intermediate		Advanced	
	n	%	n	%	n	%	n	%
Presentation applications	1	1.4	22	29.7	40	54.1	10	13.5
Web search engines	3	4.1	26	35.1	33	44.6	10	13.5
Communication applications	3	4.1	31	41.9	30	40.5	9	12.2
Word processing applications	2	2.7	20	27.0	43	58.1	8	10.8
Database applications	18	24.3	35	47.3	16	21.6	3	4.1
Multimedia applications	3	4.1	33	44.6	34	45.9	3	4.1
Web design applications	18	24.3	39	52.7	14	18.9	2	2.7
Spreadsheet applications	22	29.7	30	40.5	20	27.0	1	1.4

Besides self-rating their computer skills, respondents were also asked a number of questions about different levels of computer knowledge and skills, including turning on and off computers, starting and exiting programs, file management, performing tasks in a range of office applications etc. The results showed that there were some respondents who do not know how to perform certain tasks such as creating simple databases using applications such as Microsoft Access (53/71.6%), creating simple web pages (33/44.6%), editing sound (21/28.4%), writing files onto CDs (19/25.7%), and resizing photographs (15/20.3%). None of the respondents were unable to perform tasks such as turning computers on and off, starting/exiting programs, performing file management, scanning viruses, moving files, copying and pasting text, changing font styles and sizes, or saving files from the Internet. No less than 85% of the respondents could perform tasks such as installing software, searching files, changing monitor brightness and contrast, searching information online, printing, and creating power point presentations. When asked about a range of computer-related terms,

more than 83% of the respondents claimed to know them. Yet, some respondents did not know terms like forums and threaded discussions (21/28.4%), screenshots and screen capture (11/14.8%), synchronous and asynchronous communication (53/71.6%), thumb drive, flash drive, USB, and HDMI (12/16.2%), the cloud (30/40.5%), and search engines (11/14.9%).

Beliefs and attitudes towards the use of computers for teaching and learning

The respondents believed that there are some factors affecting the use of computers in the classroom by both students and teachers. Table 4.8 summarises the factors chosen by the respondents.

Table 4. 8 *Factors Affecting Computer Use in the Classroom (n=74)*

Factors	Reponses	
	n	%
access to the Internet	49	66.2
facilities	24	32.4
time allocation	14	18.9
knowledge of computers	12	16.2
computer skills of students	10	13.5
computer skills of teachers	8	10.8
school support	8	10.8
computer-based materials	7	9.5
interest of students	6	8.1
Inflexible teaching methods	6	8.1
interest of teachers	4	5.4
Curricular restriction	4	5.4
Other (please specify)	1	1.4

Forty nine participants (66.2%) agreed that access to the Internet is one of the factors, others considered factors such as facilities (24/32.4%), time allocation in the classroom (14/18. knowledge of computers (12/16.2%), and lack of computer skills of students (10/13.5%) as affecting factors. Interestingly one respondent indicated other factors but did not clearly mention what that was.

Overall the respondents showed positive attitudes towards the use of computers in the classroom. Figure 4.6 depicts those attitudes.

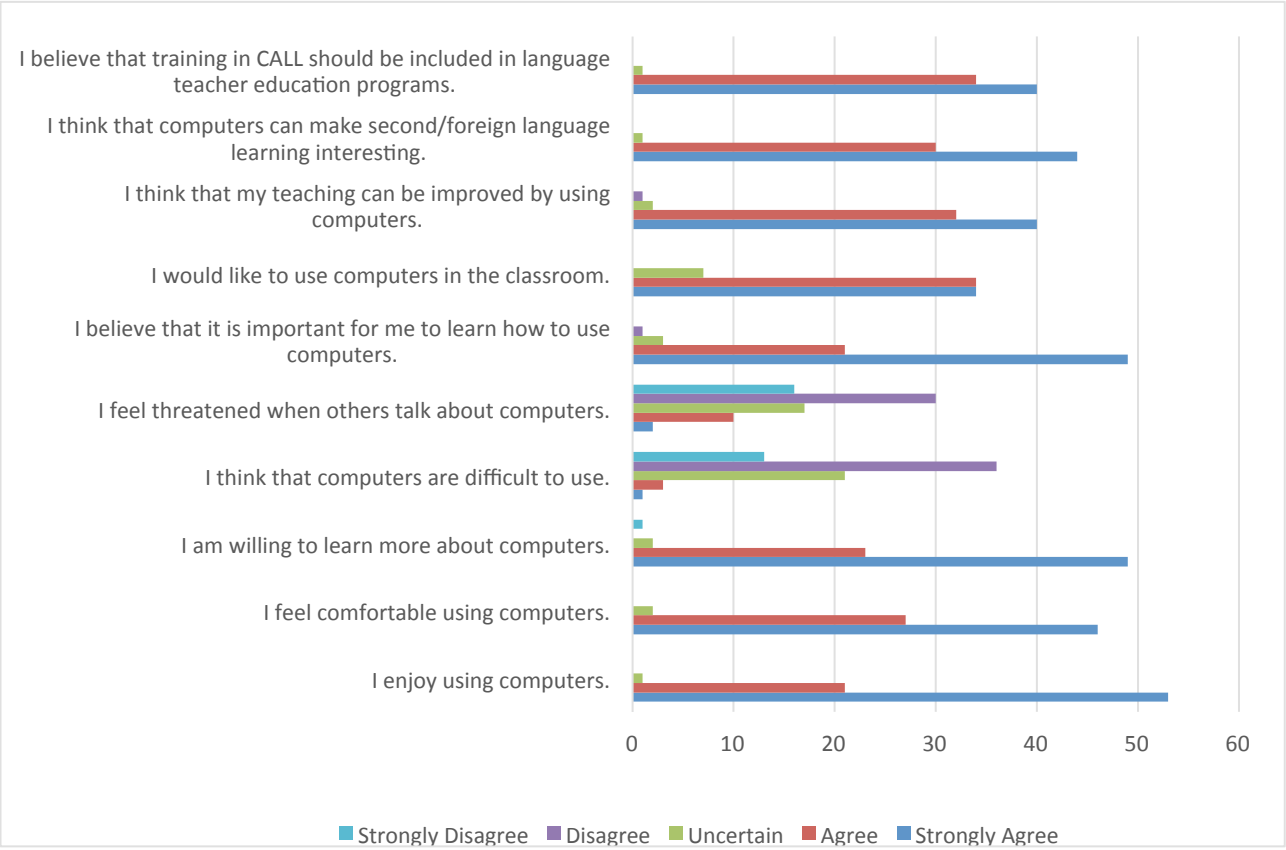

Figure 4.6 Attitudes of participants towards the use of computers in the classroom

Most respondents agreed that they would like to use computers in the classroom for teaching, because they believed that their teaching could be improved by using computers. Therefore, they believed that learning how to use computers was important. Everybody agreed that training in CALL should be integrated in language teacher training programs.

Online Learning Experience

Fifty (67.6%) respondents indicated that they had experienced online learning. With regards to online learning, 23 (46%) respondents admitted that they did not schedule specific time to do it. They also experienced some problems during online learning; for example, 50 respondents (67.6%) experienced internet connection problems, software compatibility problems (28/37.8%), hardware issues (24/32.4%), unclear materials (34/45.9%), unclear explanations or tasks (37/50%), and unreasonable time allocation for certain tasks (6/8.1%).

In order to solve these problems, they contacted their peers (48/96%), ICT support (31/62%), tutors (15/30%), others (1/2%), and 19 (25.6%) respondents did not respond. When contacting them, 49 (98%) respondents said that they managed to get help from their peers, 31(62%) from tutors, and nine from (18%) ICT support staff. As a medium for communication to get help, 37(74%) respondents used online chat tools such as Yahoo Messenger, Facebook Messenger, and Blackberry Messenger, while the rest preferred other communication modes such as direct contact.

Beliefs about OLT

Table 4.9 summaries the respondents' beliefs that are related to their motivations to study online. The result indicated that 49 (66.2%) respondents agreed that the flexibility of the online learning motivates people to learn online, 33 (44.6%) thought that with online learning, lectures, discussion, explanations, and comments were always available and just clicks away. Thirty three (44.6%) believed that they did not have to buy expensive textbooks when studying online. Thirty (40.5%) agreed that in an online learning environment they could pause their study at any time and continue it later.

Table 4. 9 *Motivations to Engage in Online Learning (n=74)*

Statements	Responses	
	n	%
Because I can study at anytime and anywhere as long as there is internet access	49	66.2
It is always available whenever needed, lectures, discussion, explanation, and comments are just clicks away	33	44.6
No more expensive textbooks	33	44.6
I can pause my study at any time I want and continue it later	30	40.5
Because I can control the study time	21	28.4
There is chance for interaction	21	28.4
It saves money and time especially because of travelling reasons	20	27.0
More time available to absorb the study material	19	25.7
Because it reduces anxiety	14	18.9
Because instructors can be more approachable in the online settings	13	17.6
I don't have to leave my job (if you already work)	13	17.6
Other (please specify)	5	6.8

Note. The question was in multiple choice form

Five (6.8%) respondents mentioned other reasons such as: online learning is a new experience, online learning enhances independent learning and gives more knowledge, with online learning students are forced to used technology better and are exposed to good websites or resources to explore, no need to hurry up, many things are easier with technology, and online learning reduces boredom and anxiety.

Post training survey

The post training survey did not measure the students' achievement in the online CALL training but was rather designed to understand the changes to the students' attitudes and believes that may be caused by the process of the online CALL teacher training. Knowing these changes based on the students' responses contributed to the understanding of the process of the online CALL teacher training. The post training survey was conducted at the end of the online training. For details about the online training implementation see Chapter 5.

The post training survey results indicated that overall respondents' attitudes towards, and beliefs in, the ICT for EFL teaching and online learning tended to be positive.

Table 4. 10 *Summary of Post Training Survey (n=64)*

No	Statements	Disagree		Uncertain		Agree	
		n	%	n	%	n	%
1	I believe that teaching and learning should not be limited by time and distance	2	3.1	1	1.6	61	95.3
2	I am confident that I can use email, online chat, and forum for communication with colleagues and my students	1	1.6	2	3.1	61	95.3
3	I think the use of technology provide easy access to authentic materials for language teaching/learning.	0	0.0	5	7.8	59	92.2
4	I think that technology provides easy access to communicative activities for EFL learners.	0	0.0	4	6.3	59	92.2
5	I know now where to get help online and find resources for helping to solve teaching problem (search engine, YouTube, online forum, e-groups etc.)	0	0	5	7.8	59	92.2
6	I am more aware of the need to carefully select information in the Internet	1	1.6	5	7.8	58	90.6
7	I believe that learning using technology is not limited with time and space.	1	1.6	6	9.4	57	89.1

No	Statements	Disagree		Uncertain		Agree	
8	I know now how to make use of technologies to manage the classroom	0	0	7	10.9	57	89.1
9	I am aware that respect should be well maintained in a successful online communication	0	0	8	12.5	56	87.5
10	I think I can motivate students to learn EFL by using technology.	0	0	9	14.1	55	85.9
11	I highly recommend teachers to use technology in his/her language teaching.	0	0	9	14.1	55	85.9
12	I think that technology enhances teaching makes learning more effective.	0	0	10	15.6	54	84.4
13	I am aware of the opportunities that computers offer.	1	1.6	10	15.6	53	82.8
14	I can now systematically organize information using various tools such as mind mapping tool	2	3.1	8	12.5	53	82.8
15	I know where to find online EFL learning resources	2	3.1	10	15.6	52	81.3
16	I know now how to learn and work collaboratively online	1	1.6	12	18.8	51	79.7
17	I know what to do when using computers for EFL teaching.	1	1.6	13	20.3	50	78.1
18	I think preparing learning materials (e.g. worksheets and handouts) by using technology is a lot easier for me now	0	0	15	23.4	49	76.6
19	I am confident to support my students with technology-supported learning	0	0	14	21.9	49	76.6
20	I think I can use technology to accommodate different learning styles of the students.	0	0	15	23.4	49	76.6
21	I am aware of the needs to respect others intellectual properties	0	0	15	23.4	49	76.6
22	I believe that teacher professional development can be continuously carried online	1	1.6	17	26.6	45	70.3
23	I am confident to participate in an online ELT (English language teaching) forum	1	1.6	23	35.9	40	62.5
24	I believe that I know how to use collaborative space like blog and wiki for EFL teaching	2	3.1	23	35.9	39	60.9
25	I know where to find resources for my continuous professional development	0	0	26	40.6	38	59.4
26	I can answer any question about how to use computers for language instructions.	3	4.7	32	50.0	29	45.3
27	I am still not confident in using computers for EFL teaching.	29	45.3	20	31.3	15	23.4

Table 4.10 summarises respondents' agreement to the given statements. Most respondents (over 70%) showed positive beliefs and attitudes towards online learning and technology-assisted learning as indicated by their agreement to statements no. 1, 3,4, 7, 11, and 12. Also, more than 70% respondents indicated agreement to statements no. 5, 6, 8, 10, 13, 16, 17, 18, and 24, which means that they had gained the necessary technological, pedagogical, content knowledge and skills by the time they finished the OCTT. Respondents' confidence in the use of technology for their continuing professional development was indicated by their agreement (more than 50%) for statements no. 22, 23 and 25.

4.3 Document Reviews

The CALL teacher training at the research site was implemented initially in 2008. The CALL course was aimed at preparing the pre-service teachers to teach by integrating technology as required by the GoI. The CALL course was offered in two semesters worth 4 credits overall. Each credit consisted of 50 minutes face-to-face sessions, 60 minutes work on structured assignments directed by the instructors, and 60 minutes for course-related independent study. The course itself had been mainly offered face-to-face with only a few online components. The online components had been used for limited purposes such as exposing students to online learning experience, distributing learning materials, and searching learning resources. For the purpose of this study, four types of documents were reviewed (See Table 3.1 for the list of documents reviewed). The four types of documents were policies, course documents, ICT for teacher standards, and journal articles.

Governmental and institutional policies on online learning and technology supported education

The first documents reviewed were policies by the government and by the institute. The aim of the review was to get a big picture view of what available legal support underpinned the management of a course in higher education especially a course related to technology teaching or integration for teacher education. During the review it was found that there were a number of governmental policies that emphasized the need for ICT education for teachers. The first one was Law No. 20/2003 on the National Education System in which the GoI strongly suggests that technology is integrated into the education process. The second is law no. 14/2005 on teachers and lectures in which the GoI strongly recommends that teachers should upgrade their academic qualifications continuously to keep up with the development of knowledge, technology, and art. The third was the government ordinance No. 74/2008 on teachers, in which the GoI recommends the use of technology for instruction purposes. The

fourth was the government ordinance no. 8/2012 regarding the National Qualification Framework. The GoI requires the graduates of teacher training institutions, which were usually at the Bachelor level, to be able to use and apply science and technology in their area of expertise to solve problems and adapt to any situation requiring their expertise.

In addition to support for technology teaching for teachers, the GoI also supported technology-based distance education through law and other legal documents. Law No. 20/2003 on the National Education System, the decree of ministry of education no. 107/U/2001, government ordinance no. 17/2010, and government ordinance no. 66/2010 confirmed that distance education has been an integral part of the education system in Indonesia. This mode of delivery, which includes education for both pre and in-service teachers, should have been technology-assisted and access should have been provided to all citizens (Kemendiknas, 2011). However, only a number of higher education institutions in Indonesia have taken part in supporting the development of online education.

The second document was the institute's policy on technology development on campus. Based on their strategic plan 2013-2017, funds were allocated to the technology development enterprise. It was noted that there has been an increase in the ICT expenditure budget since 2013 (see section 4.2.3). A few other strategies and programs that supported online teaching and learning are listed in Table 4.11

Table 4. 11 *Strategies related to online teaching and learning in the institute*

No	Strategies	Program
1	Developing e-Education to support teaching activities and research	Developing an e-Journal for Students Exploring and Improving Educational use of Social media Developing Academic SMS (Short Message service) for administrative and academic purposes Developing virtual classes (teleconference)
2	Human resources capacity development	e-Learning training for instructors Training on e-Print, e-Journal, and Digilib optimization
3	Upgrading ICT hardware	Providing wider coverage wireless access points Upgrading network capacities Providing teleconference facilities Providing TV converters for web video streaming

Course Documents

The second type of documents reviewed were course documents such as course syllabi and materials. First, the research assessed the CALL-1 course syllabus. The aims of the course were to guide students to understand the potential of CALL as well as to practice and evaluate CALL software and courseware. The materials presented were to help students achieve three basic competencies: understanding what CALL is and its development history; practicing the use of CALL-associated software which was categorized in the syllabus into three elements - generic software, dedicated software, authoring software; and evaluating CALL courseware (for the detailed syllabus see Appendix E). The second syllabus was for the CALL-2 course. This course was aimed at developing students' understanding and ability in using online tools for language teaching and learning. To achieve these aims, students were guided to master three basic competencies associated with the aims: knowing the functions of the various available online tools for language teaching and learning; being skilful in searching for EFL teaching materials online and in integrating them in language teaching; and understanding the concept of computer mediated communication (CMC). The last basic competence was aimed at equipping students with tools necessary for online collaboration (for the detailed syllabus of CALL-2 see Appendix F).

Based on the CALL syllabi reviewed, it could be seen that the activities of student teachers in each of the CALL courses were various. The activities included observing presentations by the instructors and the students, doing group work, experiencing hands on practice, and attending tutorials. Both students and the instructors conducted all these activities face-to-face. However, certainly not all those activities were covered in every meeting. There were variations of activities in each meeting to keep students and instructors motivated in the allocated time. The time for each meeting was allocated for 2 x 45 minutes,

while there were about 12 meetings minimum and 16 meetings maximum within one semester.

ICT for teacher standards

A number of existing technology competence standards for teachers were reviewed (See Section 2.3.2: *Technology competence for teacher standards*). The purpose of this review was to identify nationally and internationally recognized technologies for teachers' competencies. The results of the review were formulated in the form of standards specifically developed for the OCTT prototype in this study. The developed standards are presented in Section 5.1.2

Journal Articles

Many articles on online training and technology-enhanced education and training especially for language teachers were reviewed by the researcher. The results of the reviews were presented in Section 2.3.2. The reviews later inform the development of OCTT in this study. See Figure 2.1 on Chapter 2 for a diagrammatic representation of how the theories and literature reviewed related to the study.

4.4 Direct observation on the CALL course context

To collect the data the researcher also conducted direct observation of the CALL course context. There were a number of foci of the direct observation during the study: support available for both instructors and student teachers, the technology used, the course content and delivery, and the student teachers.

Support available for both instructors and students

Lack of support for the delivery of technology-assisted learning was very important to observe because it could affect the implementation of an online learning program. Support for instructors in delivering online learning and also in providing technology-assisted instruction is worth observing. In delivering online learning the institute actually provided ample facilities for conducting online learning and teaching. The facilities provided, such as computers, wired or wireless Internet connections, audio and video recording facilities, and imaging devices such as cameras and scanners, were available and ready to use. Yet, not much technical support was provided for instructors whenever they wanted to use them. Limited information on how to use them for teaching is another issues that is worth considering as something that could be supported by the institute in the future. Also the number of support personnel available for hundreds of instructors and thousands of students was very much and well below the ideal ratio of a good number of support personnel. Thus the support given either by phone or face to face was often not satisfactorily.

Support provided by the ICT support team ranged from hardware trouble shooting, network connection assistance, to software tutorials, and even specific ICT training for both instructors and students. However, for teachers the training provided was generally still related to the technical aspects of certain tools such as blogs, the LMS, and e-learning materials production. No training had been delivered to specifically address the pedagogical aspects of technology-based instruction. In terms of language teaching using technology, there had never been specific training for the instructors. For student teachers the technology training provided had been training on desktop applications only, and never on how to use it for learning or teaching.

On the other hand, there were two encouraging developments for the implementation of technology-assisted teaching and learning. The first was that there was growing and wide

spread interest among instructors and student teachers in the use of technology for doing their daily tasks. Therefore, the institute administrators were very enthusiastic about providing funding for the provision of technology devices. Second, they were also eager to provide support in the form of legal policies whenever ideas on promoting the use of technology in instruction were put forward. However, though the provision of technology facilities were not an issue yet, maintenance and support seemed to be a serious issue that needed to be addressed. Based on direct observation it was found that the limited number of ICT-support personnel (4 persons only throughout the Institute) was the major cause of hindrance to effective technology implementation.

The technology used

Another issue observed was the technology used. It was found that there seemed to be no problem with the technology used because the institute management always kept it up-to-date. Computing hardware for staff members' was always upgraded, specific rooms for teleconferencing was provided, a number of interactive whiteboards were available in dedicated rooms for teaching and learning, and projectors were standard equipment in almost all classes in the institute. Unfortunately, there were not many computer workstations available for students to use on campus. Although a computer laboratory was available, it was not easily accessible by students due to complicated procedures. As a result, students had to provide their own computers for use on campus. If they did not, they often experienced difficulties working on campus and then had to go to computer rental facilities off campus to work on their assignments. Moreover, even for those who had their own computer on campus, they did not have access to printers, which caused serious problem whenever they needed to have their files printed.

On the other hand, most of the students had access to the Internet through their mobile devices. They were very familiar with mobile apps and of course the Internet. Daily use of the Internet was part of their lifestyle and needs. They used the Internet for individual or group communication via mobile chat such as Whatsapp (https://www.whatsapp.com/), Telegram (https://desktop.telegram.org/), Blackberry Messenger (http://www.bbm.com/), email and social media. It seemed that social media with built-in messenger, like Facebook and Twitter, was also their preferred alternative means of communication today. In addition, they depended on the Internet for both video and voice calls through applications such as Skype (http://www.skype.com/) and WhatsApp (http://www.whatsapp.com). All in all, Internet-based communication was very familiar activities for them.

The course content and delivery

The observation was also focused on the CALL course delivered during class. In addition to the information shared in the document reviews (see section 4.3), the direct observation revealed that most of the activities in the CALL courses were generally not focused on the syllabus. The three instructors tended to present other materials, which in most parts were not part of the syllabus provided, such as journal articles, CALL materials from other universities, a variety of software, and language learning websites. One of them, who had a strong ICT knowledge, tended to deliver materials which were too technical, for example exploring authoring software without much exploration on how to use the software for language teaching and learning activities. Other instructors gave students useful CALL-related materials from journal articles. However, unfortunately there was not much discussion on how actually knowing that knowledge from the journal articles might benefit them in their teaching careers. They did not explore ways to directly apply the knowledge from the articles in their teaching learning practice.

Besides the content of the CALL courses, the activities were also observed during face-to-face meetings in the classroom. The class activities included mostly group work and student presentations. Therefore, the CALL activities seemed to be part of a very stimulating active learning process. Students were assigned in groups to work on certain topics or to produce certain EFL materials by using authoring software. They were asked to present the results of their discussions or their work to the class. The teacher's classroom management also seemed to be good. They all showed good knowledge on how to manage classes such as how to start the lesson with warm up activities, grouping the students, asking leading questions, directing students' behaviour and providing constructive feedback. Though there were limited variations in the activities, there seemed to be no objection from students regarding the activities they were assigned to do. The topics of class discussions and the variation of the software used were challenging, but there were no complaints regarding activities, time allocations and deadlines set. Students were all happy with the agreed deadline for every assignment.

The CALL courses observed did not promote many online activities. Students were motivated to go online only for few activities such as collecting information from the Internet, downloading course materials and sending assignments via email. Interestingly, the students actually had no problem with any of the online-based CALL activities. They seemed to be very skilful in finding information online using search engines, figuring out functions of certain online tools, and communicating via emails.

Student expectations towards the CALL course

Student seemed to have high expectations when they enrolled in a CALL course. They expected that they would learn computer-related information for use in language teaching and learning. They had such expectations after knowing that the CALL acronym

refers to computer-assisted language learning. They expected to learn practical computer-related knowledge and skills that they could directly apply in their language teaching at a later stage during their teaching practice or teaching real classes.

4.5 Online discussion archives

During OCTT cycles 1 and 2 (each was a one semester cycle), students were facilitated to interact with one another through online discussion media. During the OCTT cycle 1, the medium for online discussion was limited to the learning management system (LMS) and through the discussion board within the LMS (DBL), while during OCTT cycle 2 students were facilitated to have online discussions through either the DBL or through a WhatsApp (WA) messenger group which could be accessed through their mobile devices. The choice of the WhatsApp messenger was chosen due to the observation that all students had it installed on their mobile devices. Thus, making the online discussion available through WhatsApp messenger groups would give them easier access to it.

During OCTT cycle 1 it was found that there were 711 posts in the online discussion board, while during OCTT cycle 2, there were about 724 posts in the online discussion board and 539 posts in the WhatsApp messenger group. Altogether, there were 1263 posts in OCTT cycle 2. In OCTT cycle 1 there were 35 participants and in OCTT cycle 2, there were 61 participants. The average post made per person in OCTT cycle 1 was 20.3, while in OCTT cycle 2 it was 19.7. There were two types of post: compulsory and voluntary posts. Compulsory posts were made by students in response to the given assignments for an online discussion while the voluntary posts were posts on topics that were either voluntarily initiated by individuals in the online discussion in the LMSs or were in response to others' posts. Table 4.12 and 4.13 summarize the total number of the two types of posts in both cycles and Table 4.14 summarizes the total number of posts in the WA group in two cycles.

Table 4. 12 *Total Number of Compulsory and Voluntary Posts in OCTT Cycle 1*

Discussion Sections in the CALL LMS	No. of Compulsory Posts	No. of Voluntary Posts
1. Technology Corner	0	245
2. Introduction	35	169
3. Introduction comments	35	0
4. Netiquette discussion	35	2
5. Technology in education	35	86
6. Netiquette discussion 2	35	0
7. Webquest discussion	34	0
Total	209	502

Note: Discussions in section 2 to 7 are compulsory assignments

Table 4. 13 *Total Number of Compulsory and Voluntary Posts in OCTT Cycle 2 in the LMS Built-in Discussion Board (Total posts =724)*

Discussion Sections in the CALL LMS	No. of Compulsory Posts	No. of Voluntary Posts
Technology Corner		40
Introduction	61	357
Project-based learning	61	106
Game-based language learning	61	38
Total	183	541

Note: Discussions in section 2, 3 and 4 are compulsory

Table 4. 14 *Total Number of Compulsory and Voluntary Posts in OCTT Cycle 2 via WA group (Total number of Posts = 539)*

Discussion topic	No. of Compulsory Posts	No. of Voluntary Posts
1. Online vs face-to-face discussion	61	9
2. Other topics	0	469
Total	61	478

Following Son (2006, p. 127) the posts are categorized into fully task-focused, partially task-focused and off-task, where "fully task-focused messages answered pre-selected questions in the CALL course, [and] partially task-focused messages were those that did not directly answer the questions, but contained subject matter relating to any aspect of CALL. Off-task messages were those that did not relate to CALL." Table 4.15 summarizes students' posts based on the categorization.

Table 4. 15 *Categories and Frequencies of Students' Online Posts in OCTT Cycle 1 and 2*

Categories	OCTT Cycle 1	OCTT Cycle 2	
	in LMS	in LMS	In WA Group
Fully task-focused	209	183	61
Partially task-focused	267	189	235
Off-task	245	352	243
Total	721	724	539

Teachers' posts for the purpose of facilitating the online discussion were also calculated. During OCTT Cycle 1, there were 10 teachers' posts in OCTT Cycle 2, 15 teachers' posts in the LMS discussion board, and 115 posts in the WA group.

The posts made by students can also be classified into three types of online presence: teaching presence, social presence, and cognitive presence. Table 4.16 summarizes the types of online presence based on the contents of the posts made during the online discussion session, the LMS built-in discussion board, and WhatsApp messenger groups:

Table 4. 16 *Online Discussion Posts based on Online Presence Types Categorization*

No	Types of Online Presence	OCTT Cyle-1	OCTT Cycle-2	
			Online discussion board	WhatsApp Group
1	Teaching Presence	10	15	115
2	Social Presence	245	352	244
3	Cognitive Presence	476	372	295
	Total			

Finally, data analysed indicated that students preferred posting extended opinions via the online discussion board. In contrast, through the WhatsApp messenger (mobile discussion) they preferred to post short messages, even if a few longer ones (more than 30 words) were still also found. In addition, the posts made through mobile messenger seemed to be more personal and more intensive when considering the reply time, which was very short (about less than 15 minutes on average) after an initial post was made. The mobile discussion was mostly used by students for asking and sharing information that required immediate responses, such as questions on the procedure for submitting assignments and information for immediate attendance to a group meeting. It was noted that students liked to use emoticons during the WhatsApp group discussion. It was noted that 128 (23.7%) posts include emoticons. According to the students, they used emoticons in their posts in order to stimulate

interactions, emphasize meanings or emotions, create more relaxed discussions, show friendly support, agreement or disagreement and strive for presence.

4.6 Hidden Issues: Some minor doubts regarding the online teacher training implementation

There were concerns about the implementation of a fully online teacher training program at the institution, especially regarding the supporting policy. Below are the concerns expressed by the ICT administrator and a local instructor:

During the interview with the ICT administrator, it was mentioned that there was no specific operational procedure policy that will support the implementation of the online teacher training program. He also mentioned that required face-to-face meetings for a course offered at the institute might also be a hindrance for the implementation of OTT. Therefore, he thought that online training implementation potentially might face problems related to regulation and policies. As an alternative, he suggested that a blended mode of training might be more applicable but with some reservations; such as requesting the quality control department to make a change in their quality control documents and provision of supporting policy.

> "…..online learning may also means distance learning…this might imply various consequences such as no requirement for class attendance while actually, class attendance or face-to-face meeting is still required here. Blended learning mode can be alternative then….mmmh… where…say…30% face-to-face and 70% for online learning…but that require supporting policy and we need to also contact quality control for a change in their quality control documents for supporting such 'innovation' with policy…." – Excerpt 14

A local instructor also expressed another concern. She felt that if there were online training, face-to-face- meetings should also be facilitated as well. Face-to-face meetings were aimed to support the students or trainees who might not feel comfortable to online training. It would also help students to be serious about their learning. She said:

> "..if online training is to be implemented then it should be supported with face-to-face-meeting….this will make sure that the students are learning and are on track while learning….it is also to make sure that the students are following the whole proses of training…some students might not feel satisfied while only learning without physical presence of their instructors or peers." – Excerpt 15

Further, the local instructor also doubted her own ICT knowledge and skills. Her utilization of an online learning management system for teaching and her educational background in online instruction seemed to be ample to start integrating technology and teach online. It seemed that she needed facilitatation and training to gain her self-confidence to the use ICT and online training.

4.7 Summary

Findings from the data collection through various techniques such as surveys, semi-structured interviews, document reviews and direct observation have been presented in this chapter. It can be said that students, administrators, and instructors had, in general, positive beliefs towards ICT-assisted teaching and online learning. Students' ICT knowledge and skills were also functional and therefore, they seemed to have no problems with ICT. Furthermore, it was found that strong support for conducting online training was expressed by the administrators and the ICT administrator, as well as by the GoI. Therefore, the implementation of online CALL teacher training was not only possible but also encouraged. Eventually, the implementation of the OCTT prototypes in two cycles was achieved during the study. Details about the implementation will be presented in Chapter 5.

Chapter 5: Intervention

In Chapter 4 findings of the study were presented. Then, based on the findings, a two-stage intervention plan was designed. The plan was to develop an OCTT prototype and implement it in the research site. A description about the process of the OCTT prototype development is presented in this chapter.

5.1 Stage One: The Intervention Cycle 1

As has been mentioned in Chapter 3, there were two stages in the study. The first one focused on problem identification, and development of the online CALL teacher training (OCTT) course design principles, as well as development of the draft solution (prototype course), and testing of the prototype in cycle 1. Based on the data collected and presented in the previous chapters, there were few lessons from the existing CALL teacher training practice that could be incorporated. Figure 5.1 summarizes the results of the data collection based on the potential strengths, weaknesses, opportunities, and threats (SWOT).

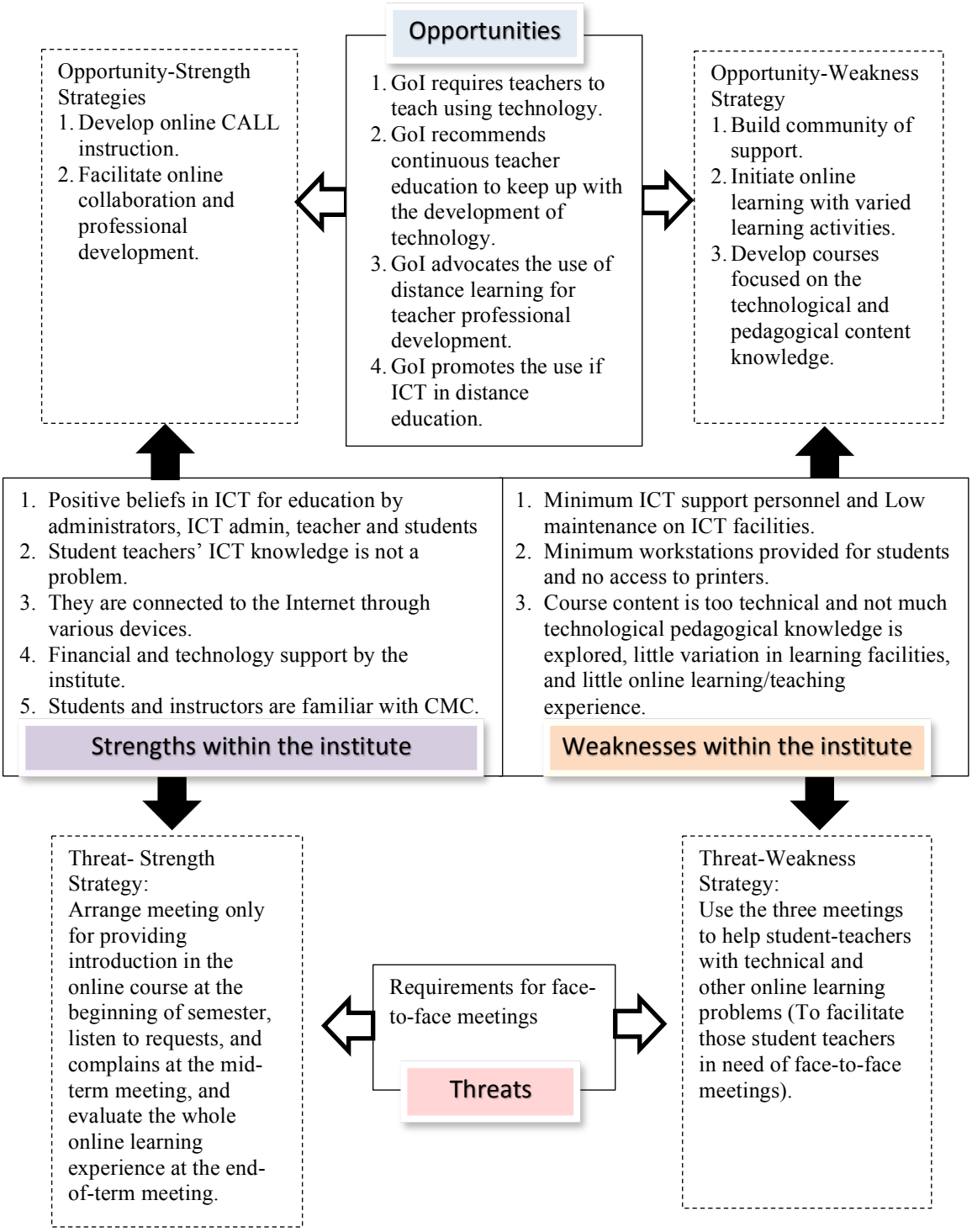

Figure 5.1 Summary of data collected for the consideration of the implementation of online CALL course

The *strengths* included any positive characteristics, tangible or intangible, available internally within the institute, while *weaknesses* were disadvantageous characteristics within the institute. On the other hand, *opportunities* and *threats* were external characteristics which were beyond the control of the institute. *Opportunities* were related to the external factors that could be exploited to its advantage. *Threats* were any factors that could cause disadvantages for the efforts made. In addition to the Strengths, Weaknesses, Opportunities and Threats, the combination of the two aspects (internal and external) as depicted by the bold arrows and hollow arrows results in the new strategies. The strategies in the SWOT analysis was considered when developing the OCTT prototype.

In figure 5.1 it is also indicated that face-to-face meetings could be a threat as an effort to introduce the online training. If the institute required that face-to-face meetings to be held as part of a course, there was a potential threat that may prevent the introduction of online training. Therefore, this issue should be addressed carefully when online training will be offered. Negotiation regarding the extent of face-to-face meetings should be planned.

5.1.1 Draft 1 Principles for developing OCTT

As indicated in figure 4.3, it was confirmed that the implementation of OCTT was feasible because of some potential factors such as support from the administrators, and students' and teachers' familiarity with both ICT and the Internet. Moreover, the GoI suggested utilizing ICT for teaching and for distance education to facilitate teacher professional development. The following step was to determine what principles would guide the development of the OCTT prototype. As an initial guide for the development of OCTT prototype, the following principles were generated based on the reviewed literature. Table 5.1 details the principles used during the development of the OCTT.

Table 5. 1 *The Principles for Developing OCTT: Draft 1*

No	Principles	Operationalization	Authors
1	Reliable and Accessible Support	Engagement by students and teachers should be maintained throughout the course.	Bailey and Card (2009)
		Engagement is important to provide continuous, accessible and timely support and assistance required by students	Anderson (2004), Elias (2011), Gunn, 2011, Jung (2005b)
		Use various available CMCs which are preferred by online learners nowadays	Lan et. Al (2012)
		Cognitive, social and teaching presence is necessary in online discussion during online learning. Ensure a secure feeling of getting easy access to support	Pelz (2010) and Herrington (2006)
2	Involving collaboration components	Collaborative work is recommended for online learners	Bailey and Card (2009), Elias (2011), Gaytan and McEwen (2007), Pelz, (2010), and Son (2014)
		Interaction underpins effective online instructions	Pelz (2010)
		Collaborative work promotes not only active learning but also higher order thinking skills	Bailey and Card (2009) and Yan (2009)
3	Continuous and constructive feedback	Continuous feedback contributes much to the students' success in learning.	Bailey and Card (2009)
		Constructive timely feedback for online learners is not only preferred but also mentioned as one of the advantages of online learning	Gaytan and McEwen (2007)
		Feedback is a critical success component in online learning and should be accessible anytime and anywhere by students	Bailey and Card (2009), Gaytan and McEwen (2007), and Gunn (2010)
4	Contextual teaching and learning	Education processes should be aimed at helping students to make meaning of what they are learning by connecting it to the context of their daily lives	Johnson (2002)
		Students should see the connection between what they learn and what they may experience in the real world	Hudson and Whisler, (2008) and Shamsid-Deen and Smith (2006)
		The clearer the connection between what students learn and what they need in the real world, the more likely that students are motivated to keep learning.	Park and Choy (2009)
5	Timeliness in providing feedback and support	Timely feedback is one of the strategies to improve online assessment	Gaytan and McEwen (2007)
		Timely feedback gives students much opportunity to benefit from the online courses	Bailey and Card (2009)
		Timely feedback is an important design principle determining the success of online learning	Gunn (2010)
		Timely support by empowering staff is necessary in ICT-rich training	Jung (2005b)
6	Using reliable technology and assisting the mastery of sufficient technological skills and knowledge	Technology often becomes an issue in online instruction if it is not reliable	Keengwe and Kidd (2010) Muilenberg and Berge (2005), and Sun et al. (2008)
		Students often find learning online frustrating and demotivating if the materials are difficult to access or the technology being used is not easy to master	Anderson (2008)

No	Principles	Operationalization	Authors
		Prior training is necessary to equip teachers and students with sufficient technological knowledge and skills	Bhati et al., (2010), Ko and Rossen (2010), and Sun et al. (2008)

5.1.2 Determining standards for OCTT

Based on the above-mentioned principles, the OCTT prototype course was developed by firstly modifying the existing CALL syllabus. There were two phases in the process of syllabus modification: determining the standards to be adhered to, and selecting content and activities.

First, in determining the standards, as presented in the Chapter 2, a specific review of technology for teachers' standards is presented (see Section 2.3.2). It was mentioned there that the existence of standards for guiding the CALL teacher education is essential. Therefore, for consideration in the OCTT prototype development, a number of standards were reviewed, and then similarities within those standards were identified. The similarities were later compiled and listed. The compiled standards were then used for guiding the development of the OCTT syllabus by the researcher, in collaboration with a local instructor

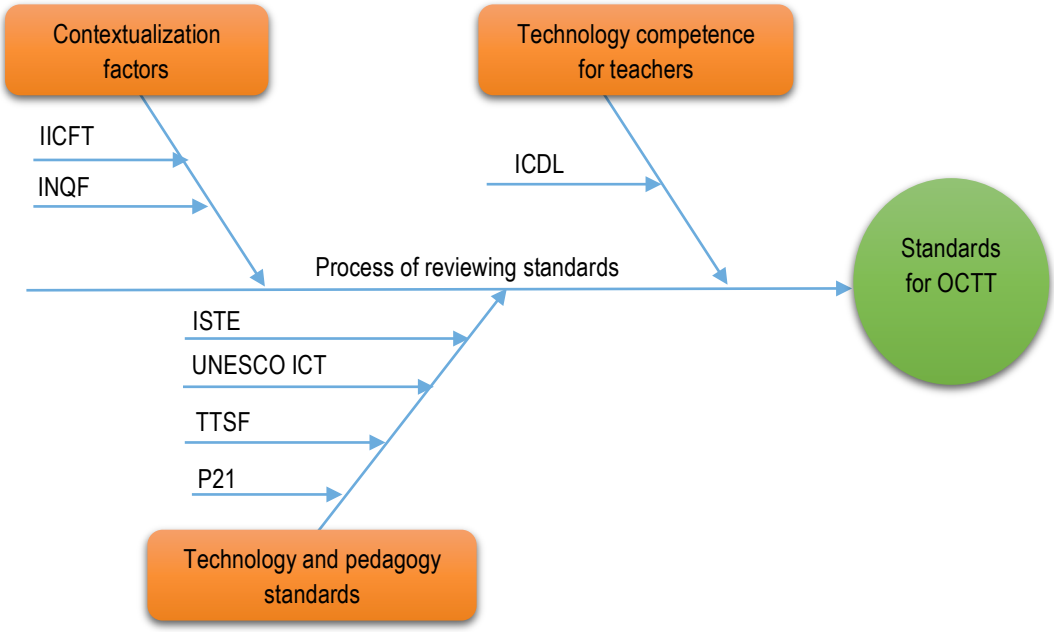

Figure 5. 2 Aspects affecting the selection of standards for OCTT prototype development

In selecting the standards, there were three aspects taken into consideration (See Figure 5.2): first, the contextualization factors (Midoro, 2013, Anderson, 2008), second, the technology competence standards for teachers (ITEA, 2003), and third, the technology and pedagogy standards (Compton, 2009; Hubbard, 2008; Kessler, 2006). For contextualization purposes, the following standards were reviewed: Indonesia ICT Competence for Teachers standards (IICFT) (draft) (Purwanto, Bodrogini, Sumarwanto, Chaeruman, & Butcher, 2012), and Presidential ordinance NO. 8/2012 on the Indonesian National Qualification Framework (INQF). Regarding what technology competence should be achieved by students during the OCTT, the standards reviewed were the International Computer Driving License standards (ICDL) (http://www.icdlasia.org/). With reference to technology and pedagogy, the standards reviewed were UNESCO ICT Competence for Teachers (ICTCFT) (UNESCO, 2008), TESOL Technology Standard Frameworks (TTSF) (Healey et al., 2008), International Society for Technology in Education (ISTE) Standards for Teacher (ISTE, 2008), and the Framework for 21st Century Learning (P21) (P21, 2011). The standards were compared and similar qualities and competencies were identified to then formulate the competence objectives later during the syllabus development. Similar qualities may not have appeared in every standard reviewed but those appearing in two or more standards were considered to be necessary for consideration in the OCTT syllabus development. Table 5.2 maps the qualities derived from each of the above-mentioned standards

Table 5. 2 *Qualities and Competences Derived from Various Standards*

		Qualities to achieve through online training	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Skills and Knowledge	b & c	Developing, Designing, Adapting Assessing materials (for teaching)	x	x	x	x	x		
	b	Using ICT for assessing students learning outcomes	x				x	x	
	c	Creating Media/Products	x		x		x	x	x
	b & c	Using up-to-date digital tools/resources for accessing helps, experts, and resources	x		x	x	x	x	
	b & c	Using up-to-date technology			x	x	x	x	
	c & d	Contributing/Participating in Communities of	x		x	x	x	x	

		Practice (CoP)							
	c	Contributing to Knowledge	x			x	x	x	
	c & d	Communicating effectively and efficiently using ICT tools (including presentation skills)	x		x	x	x	x	x
	c & d	Accessing/searching, evaluating, managing and using information by using ICT	x	x	x	x	x	x	x
	b	Managing Lesson or schools using ICT		x	x	x	x	x	
	b, c & d	Accessing the Internet through various devices	x					x	
	b & c	Using social networks for learning, collaborating and professional development	x			x			
	d	Understanding Global Societal Issues					x		x
	a & d	Knowing and respecting Intellectual Property					x	x	
	a & d	Netiquette				x		x	
Online training strategies	c & d	Collaborative Work	x		x	x	x	x	x
	b & c	Problem-based Learning	x	x		x		x	x
	b	Facilitating critical thinking						x	x
	b	Personalized Learning Styles/Accommodate diff learning styles			x	x	x	x	
	a & d	Promoting cross cultural understanding						x	x
	c & d	Promoting Sustainable/Continuous TPD	x		x	x	x	x	
	d	Equitable Access	x			x		x	
	c	Sustainability	x			x			
	c	Having an impact on administration and management of the school			x		x		
	d	Promoting/Motivating the use of ICT for learning	x		x	x	x	x	
	a	Using open education resources/open source software	x						

Note:
(1) 1. Indonesia ICT competence for teachers; 2. Indonesian National Qualification Framework; 3. International Computer Driving License; 4. UNESCO ICT Competence for Teachers Standards; 5. TESOL Technology Standards Frameworks; 6. ISTE Standards for Teachers; 7. P21 Framework
(2) a. Personal Competence; b. Pedagogic Competence, c. Professional Competence, d. Social Competence

The qualities listed above were derived from the various sources of standards reviewed. They were then classified based on skills and knowledge and online training strategies. The qualities listed in the skills and knowledge classifications were later used as a reference for developing competence objectives, while the qualities listed under strategies classification were used as a reference in developing activities for the OCTT prototype. The qualities were aligned with the 4 government required competences for teachers, namely personal, pedagogic, professional, and social competences (see the First column of Table 5.2), to identify how the qualities might be associated with the four competencies required by the GoI through its Ministry of Education Ordinance No.16/200.

Second, once the standard for OCTT prototype was determined (See Table 5.2), the next step was to state the competence objectives and determine what content and activities were to be assigned during the OCTT. The content chosen and activities chosen should later lead to the achievement of the stated competence objectives. Besides, to obtain the optimum benefit of the interaction between technology and pedagogy, there should be balance between the technology and pedagogy in the learning context. The OCTT course content and activities, therefore, were also mapped based on the TPACK framework.

In addition to the qualities from the reviewed standards, GoI competence requirements, and TPACK, two other aspects were also taken into consideration when the content and activities to be assigned during the OCTT were selected. They were the adult learning principles and the online learning instructional model that have been discussed in chapter 2. For the online learning model adapted in this study it was decided that Salmon's model was to be used during the delivery of the OCTT (see Section 2.3.2 for the discussion about online instruction models). The model was chosen because it was perceived to be relevant to the habits and conditions of the students on site as well as to the objectives of the course. The model suggests graded scaffolding for the online learning activities. The scaffolding guides the online learning novices through four stages: familiarizing the online learners with the online environment, facilitating online socialization among online learners, motivating extensive exchange of information during the online learning, and eventually encouraging students to contribute to knowledge by utilizing what they have learned.

Such features facilitate online learners to always interact with others and thus feel safe in a collaborative environment. The feeling of always being in a society that most online learners demand can still be met through implementing this model. This Salmon's (2013) model was designed to gradually prepare students to become ready for continuous and professional self-development, which is one of the ultimate goals of the designed OCTT

course prototype. Using the model, the online instructors were also made aware of their roles regarding what type of support they should provide in each stage and how much interactivity they should maintain to make sure that learning occurs amongst students. This model was also perceived as facilitating the socially constructed learning process to happen among the online students due to the possibility of intensive collaborative work that was very much encouraged at each level of the model. One more important aspect to consider during the OCTT development was the adult learning principles. All students in the OCTT were adult learners, and adopting these principles helped inform what and how adults actually learn. Therefore, taking the principles into consideration helped to make sure that the acceptance of the OCTT by the students was good.

In conclusion, all the information above, in combination with the potentials available on site, and including the document reviews, the TPACK framework, the online learning models, and the adult learning theories, were then used to inform the development of the OCTT syllabus (For detailed sample of the designed OCCT prototype syllabus see Appendix F).

5.1.3 A closer look into the sample syllabus and the sample course materials

The sample of the OCTT prototype syllabus was a modification of the previous available syllabus on the research site. A few modifications were made, ranging from the learning materials, learning experience, and assessment, to the delivery of the materials which were previously offered face-to-face. The syllabus development was started from identifying the goal of the course, which was in turn derived from the GoI documents mentioned above, requiring teachers to integrate the technology into their instruction and to continuously develop their competencies. Consequently, the goal of the course was formatted and stated as

> "Students are aware of the potential of ICTs for assisting language teaching and learning, are able to plan ICT-based language teaching and learning activities as well as being aware of the potential of ICT for their sustainable self-professional development" - Excerpt 12

Referring to the above-mentioned standards, some qualities were then translated into more achievable competence objectives such as the ones listed in the column labelled 'objectives'. The objectives would be expected to lead students to the achievement of the goal stated. Beside the objectives, there are specific labels such as TK, PK, CK and PCK in the syllabus. Those labels represent the 7 TPACK components. By labelling the syllabus with the acronyms, it was easier to keep track of the materials and activities assigned to find out whether the technology, content and pedagogy knowledge and skills were presented in an acceptable balance.

In agreement with the Salmon model of online learning, the materials and activities, were presented to students in specific stages as suggested by the model. As can be seen in the syllabus sample, the model stages, put in column one of the syllabus table, guided the presentation of materials and activities in order to achieve certain specific objectives. The objectives were also adjusted to meet the purpose of each stage in the model, in line with the underlying principles of the model, which directs students to have active participation and interaction through online discussion. The discussion activities in the syllabus were made cyclical wherever possible. For a sample of such a cyclical online discussion task see Appendix L (sample materials 2). In that samples, students were required to post a comment (see session 1 assignment 1.2), then in the following session (see session 2 assignment 2.2) they were required to comment on their friends' posts from the previous session. In that way, the online discussion would be attended by many students because they were encouraged to share more information and comment on others' posts. They should have ample time to interact with others, and consequently have more opportunities to learn from peers.

In addition, through such cyclical discussion assignments, students were always reminded about what they had learned previously because they needed to look back to the previous materials every time they needed to comment on the discussion. Another benefit was that every students would be motivated to send messages, thus limiting the amount of lurking. Also, by having such cyclical discussions, everyone would feel that their contributions were valued and that they were being respected by others (see Knowles' Theory Chapter 2 section 2.2.2 about the need to show respect for adults learners).

Having completed the syllabus development, the next step was to develop the materials. By considering the syllabus and the information obtained during the data collection, as summarized in figure 5.1, as well as the qualities listed in Table 5.2, the materials were developed by making use of the abundant available open educational resources (OER) on the Internet. (For an example of OCTT materials see Appendix G). In the sample materials, it was attempted to incorporate a number of the qualities listed in Table 5.2 in the design of the OCTT. See Table 5.3 for an example of how relevant qualities were manifested in the materials.

Table 5. 3 *Examples of Relevance between Qualities and the Designed OCTT Materials*

Qualities	Description from the materials
Creating media products	Students are asked to produce a comic for language learning and a piece of writing.
Up-to-date tools	Students use comic creator and cloud-based collaborative tools such as Google drive
Contributing to knowledge	Students store their products (comics) in a public repository for access by others.
Communicating effectively using ICT	Students present ideas using comics and communicate through Google chat during collaborative writing
Cater for various learning styles	The materials do not only use text, but also, images, videos, as well as webinars. Students do not only read and write but also experience practical experiences like making comics
Collaborative works	Students produce a piece of writing collaboratively online
Promoting the use of ICT for learning	Students learn and do the assignment online
Open education resource	The materials promote the use of open education resource (OER) applications like Google Drive, Cloud-based time-lining tools, YouTube videos etc.

To meet the principles as presented in Table 5.1 the following efforts were made during the implementation of the OCTT. See Table 5.4 for a sample description of how the principles were demonstrated in the implementation of OCTT.

Table 5. 4 *The Realization of Online Learning Principles in the OCTT Implementation*

Principles	Realization
Reliable and Accessible Support	- The use of a built-in messaging application in the LMS used provides ease of communication between students and instructors or students and students. - The built-in messaging application within the LMS used was interconnected with the students' or instructor's individual emails accessible from their mobile devices.
Involving collaboration components	Most of the assignments in each session were designed for group work requiring group commitment to complete them.
Continuous, constructive and meaningful feedback	The instructor made a necessary effort to be always present socially, cognitively, or even only socially online. The interconnectivity feature between the LMS and the Mobile App in the instructor's Mobile device helps the realization of this kind of presence.
Contextual teaching and learning	The materials and activities selected to be used during the OCTT were those directly relevant to the students' context, such as teaching, reading, and writing skills and using accessible web applications like Google Drive. Moreover, the activities they did during the OCTT were activities that they could directly implement in their classes once they would be deployed in the real classroom.
Timeliness in providing feedback and support	The timeliness in providing feedback and support were very much assisted with the mobile device friendly features of the LMS used. An example of this would be the case when students post questions on the LMS, after which the instructors and other students are almost instantly alerted in their mobile devices and could respond to questions immediately.
Reliable technology and sufficient technological skills and knowledge	The LMS used was the one that is reliable in terms of connection, multiple devices accessible and compatible, has a user friendly interface, provide user analytics features to help keep track of student progress, includes accessible professional and community support, is free and most important of all, has received good feedback from prominent institutions or users.

The adherence to adult learning theory was also manifested in the OCTT in the form of the following aspects (See Table 5.5):

Table 5.5 *Realization of Knowles' Theory in the Implementation of the OCTT*

Adult learning theory (Knowles's Theory)	Realization
Adult learners are autonomous and self-motivated	In the OCTT the theory was manifested in the form of fostering learners' independence to explore and discuss materials within themselves. All forms of tutorials were given in the form of links to OER, i.e. video, text animation, or images. The students were also equipped at the beginning of the course with the skills to do web research to find possible solutions to their problems during online learning. The skills taught included skills to effectively use search engines, video sharing websites, and participating in specific online forums
Adult learners have already had life experiences and knowledge	The activities in the OCTT assumed that students had no problem with ICT, which was based on the findings during the survey as presented above. Therefore, the tutorials and assignments, which were mostly web-based, were presented with such an assumption. In addition, in other assignments where students were asked to make lesson plans, the instructor assumed that they had been previously had teaching experiences that they could incorporate in the lesson plan design, even though, of course, they might still need a model. Therefore, a model of a lesson plan was also presented prior to the lesson planning assignment. See Appendix G (Session 12)
Adult learners are relevancy-oriented	The materials and activities chosen were always based on their educational background. Since they were majoring in EFL teaching and preparing to teach in elementary and high schools the sample activities were always adjusted to meet the teaching needs at the level of education. For example comic creation and creating timelines that are usually taught in high school especially when they learn to write and recount text.
Adult learners are practical	Each session in the OCTT consisted not only of readings on theory or watching tutorials, but also some practical assignments where students were required to perform certain skills, such as creating timelines, preparing presentations, authoring comics and games, which were all designed for EFL learning purposes.
Adult learners should be shown respect	At the beginning of the OCTT there was a specific discussion on netiquette where students learned how to perform in the online environment respectfully. This discussion was to guide them to realize that they would be in an environment where they should show respect to one another. Also, when providing feedback the instructor always highlighted the students' strengths and used acceptable and polite language.

Accommodating all qualities, theories and principles in a single presentation of OCTT materials or activities was difficult to do. This difficulty was partly caused by a number of factors such as time allocation and the objectives of the online learning activities. Therefore, they were accommodated in multiple material presentations and activities during the OCTT.

5.1.4 Selecting LMS for presentation of the OCTT materials

Once the materials were designed and developed based on the above-mentioned principles, qualities, theories, and the affordances that the institute and students were capable of, the next step was to select an online learning platform that would accommodate students to effectively learn online. Details about the criteria used during the selection of an online learning platform are summarized in Table 5.6

Table 5.6 *Criteria for LMS Selection for OCTT*

No	Criteria required	Details
1	Open educational resources	Although the institute provided support for hardware or software provision they also suggested the use of open education resources which in this case also included the tool used. The choice of the OER tool was also intended to address the current lack of technical support in the institute as observed during the study. For that reason, the preferred LMS was a cloud-based/hosted one, since zero server maintenance would be required on the part of the instructor and the institute.
2	User friendly interface and features	As has been mentioned above, ICT knowledge and skills of instructor and students were not a problem. Yet, since the online learning should be mostly learner-centered and not tool-centered, the user friendly interface and features of the LMS should accommodate more learning of content rather than learning the tools.
3	Enable cross platform real time communication (synchronously or asynchronously)	It was evidenced from the survey and observation that students used various operating systems for their computing needs. Therefore, the LMS used should be compatible with those computing conditions. Also, the LMS should support real time communication since students, as has been previously discussed in the chapter, need timely and accessible support from either peers or teachers to give them the feeling of being in a community and being supported. The real time communication can be in the form of email, text-based messages, audio, or even video communication.
4	Mobile devices compatibility	The observation and survey data revealed that students and instructor use mobile devices for connecting to the Internet. They were also found to be very familiar with internet-based mobile messengers. These two potentials were taken into consideration when selecting the LMS. Thus the LMS was mobile device compatible and friendly in terms of the interface and the messaging features.
5	Reliable access	The LMS should be hosted in a reliable server that could be accessed anytime anywhere. Connections should be acceptable and not too slow since slow connections would just create frustration on the part of the students and instructors.
6	Performance analytics tools	For the purpose of providing support, guidance, and assessment, a feature of the LMS that enabled those three functions was preferred. A feature like grade book, quiz maker, performance statistics, discussion posts and page views collector, and graphics of students performances were supposed to be available in the LMS used.

No	Criteria required	Details
7	Accessible technical support	Teacher and students should be able to concentrate more on the content being studied rather than on the technical aspects of the online training. Any technical problems should not be a distraction for students and teacher during the process of online learning and training. Therefore, reliable technical support should be within the reach of both students and teachers to ensure that the online learning process happened as planned. Community support and forums would also be beneficial for the teacher since he could then learn from others' experience when using the same LMS. Accordingly, a built-in community forum in the LMS was preferred for both teacher and students.
8	Privacy and security	Students' and teachers' privacy should be protected in the online environment to guarantee a secure feeling for both of them during online learning. For that purpose a password protected personal and shared virtual space for each of them was available. In most LMSs, such security features are standard.

Based on these criteria, evaluations of some LMSs available on the market were conducted and one LMS was chosen. Schoology LMS (https://www.schoology.com) was chosen to be used in the cycle 1 OCTT implementation because it met all the criteria.

5.1.5 The Implementation of OCTT Cycle 1

The OCTT was conducted for about 4 months with three face-to-face meetings at the beginning, in the middle, and at the end of the course. The purpose of the first face-to-face meeting was to give students information and to make a class contract with them regarding the management of the OCTT. In addition, the first face-to-face meeting was also intended to provide students with necessary information related to the use of the LMS features. The second face-to-face meeting was used to collect information as well as to meet many students' expectations of having physical meetings (some of them mentioned their expectation to have a physical meeting). Accommodating the expectation was intended to assist them in order not to be too stressed due to their first full online learning experience in which they had basically no physical meetings with their peers and instructor. The last face-to-face meeting was aimed at collecting information regarding their online learning experience.

The students were monitored as they actively participated in the OCTT, though there was some confusion observed during the initial weeks or during stage 1 and 2 of the Salmon model. The confusion observed was mostly related to the technical aspects of the LMS such as students' lack of knowledge of: (1) how to post questions or how to respond to posts, (2) how to submit assignments within the LMS used, (3) how to update their own profiles, and (4) where to locate information. Some of them were confused because they were not able to access the video materials online due to their slow Internet connections. In addition, they felt confused because they did not know where to find support or to search for help.

Besides the technical related problems during stage one and two of the model, other problems were mostly caused by the new experience in fully online learning that they had not experienced before. They mentioned that they were uncomfortable at the beginning of the course because they were not used to fully online learning, and they were more comfortable with face-to-face training where they could directly see and communicate with the trainers and their peers. Moreover, they did not need to spend more time reading because they said they could just as easily listen to the trainers or instructors delivering materials. The new experience also caused many of them to feel uneasy because they had to start communicate their ideas in written form. They were not used to such written communication in the target language, especially in writing long paragraphs to explain particular ideas. Another 'uncomfortable' experience students faced during the initial stages of the OCTT was that they had to solve problems (especially technical problems) themselves through trial and error or communicating with others.

During stage one, students initiated interactions through the online forum within the LMS, while stage two students learned to socialize with their peers within the online environment. The above-mentioned confusion and problems encountered were still considered normal since they actually needed to get used to the features in the LMS. In the

following stages, there seemed to be fewer problems in using the LMS and communicating online since students had already became more interested in participating in online exchanges. This was evident by the number of total postings during the OCTT, 711 posts, which was quite a lot of posts for the first fully online training that students experienced at the institute. (For further details about students posts see section 4.5).

There were two aspects noted as fostering students' online participation: first, the cyclical discussions, which were made compulsory or were graded, and second, students were continuously motivated to participate online by being alerted that their online contributions would not only help others, but would also give them credits for their study report later. The motivation was provided by the OCTT instructor through giving motivating feedback and striving for online presence. The motivating feedback consisted of rewarding comments as well as direction on what to do next. For online presence, the instructor kept on making an effort to show that he was online by posting comments to students' posts and replying to individual questions as timely as possible. Yet, these two motivational strategies may need more detailed plans in order to effectively motivate students' online participation.

Apart from the motivational strategies, the OCTT prototype was implemented as planned though with some room for improvement. The three stated OCTT goals were achieved. They were firstly awareness of the potentials of the ICT for assisting language teaching and learning, secondly, the ability to plan and conduct ICT-based language teaching, and thirdly, awareness of the potential of ICT for sustainable self-professional development. The achievement of the first goal was manifested in the form of students' portfolios through which they demonstrated their abilities to use various online tools for the purpose of language learning and communication (See Appendix H-1 until H-4 for students' sample works showing the achievement of this goal). The second goal was partially achieved because students could only experience making the ICT-integrated language teaching lesson plans but

never experienced teaching it, not even in simulation only (See Appendix H-5 for sample lesson plan that students created during the OCTT). In addition, there is also a sample of a student's idea of teaching English using ICT, which is in this case Whatsapp messenger (see Appendix H-6). Later, the idea of using Whatsapp messenger for teaching was adapted and implemented for OCTT cycle 2. The last goal, which was more on students' awareness of the use of ICT for sustainable self-professional development, was manifested in their participation on the EFL teaching forums, email list, open online courses and social media groups (See an example of the activity in the Appendix H-7 and H-8).

Another interesting discovery during the OCTT Cycle 1 was that the instructor did not need to introduce all the technical operation of the mostly web-based tools used during the OCTT. All the technical operation of the tools was learned by students themselves. The instructors' role was mostly only to serve as a guide, who gave direction to students on where to locate specific information they needed to work on for their assignments. The instructor was also playing the role of a guide who helped students optimize their prior knowledge to further their study and to share their knowledge with their peers. In addition, the instructor also functioned as a facilitator, ensuring that students' online learning experience occurred effectively during the OCTT as planned.

Students were found to be very collaborative when working in groups. They worked hand in hand to search topics or to solve problems they encountered during their learning online. It was also noted that search engines and web-sharing videos were found to be their preferred tools to search for new information to teach themselves and each other during the collaborative work, rather than individually consulting the instructor especially in technology related matters. In a group discussion a student voiced this experience and many agreed with him.

> "…..by using search engines we can find many things…almost many information we need to help us in working on assignments can be searched

> using search engines. We just need to know the key words…. I also often use YouTube. If I do not understand text-based tutorials or if I want an instant answer to my technical problem …..Then often YouTube help me much…when I did not know how to do certain things in Microsoft Words for example… I just search the video tutorial in YouTube…then I instantly become an expert" - Excerpt 13

In terms of solving technical problems, they also preferred consulting their peers. When this phenomenon was confirmed by students, they unanimously agreed that by using the two tools they could easily get quick and satisfying results. They also felt more secure when asking or discussing their problems with their peers.

5.1.6 Reflection on OCTT cycle 1 implementation

The implementation of the OCTT has gained some good and meaningful input that was useful for the development of the OCTT. Students' experiences voiced during the interviews revealed that they were happy with the knowledge and skills they obtained during the OCTT (see 4.1.4). However, there were still a number of shortcomings noted during the OCTT that need to be worked on for the improvement of the OCTT in the future. The effort to improve the OCTT prototype implemented during the cycle 1 was then tried out in the cycle 2 (see 4.6). A number of notes from the cycle 1 OCTT implementation are presented below.

Students' potential and issues they faced during OCTT

Related to students, there were three phenomena noted. Firstly, as mentioned above, students generally expressed satisfaction with the OCTT. However, there were some stories of concern that they put forward such as slow internet connections, incorrect time settings in assignment submission deadlines, boredom caused by working with the same groups, and inability to get instant help whenever they needed it. Secondly, students were already digital natives; therefore, too much focus on technical aspects of the technology used in CALL was

not be for them. They could deal with their own technical problems with the help of search engines, video sharing websites, and peers. Thirdly, boredom among students due to the constantly grouping them for assignment work should be addressed. It was planned that there would be random grouping for each assignment. The random grouping would be automatically done by using a web-based tool (OER). Fourthly, the students needed immediate responses when they required help or answers during OCTT. They would be provided with a specific medium accessible and preferred by them for massive and online communication such as WhatsApp messenger. Through such a medium of communication, support to students by their peers and instructors could also be more timely. Fifthly, to distribute more responsibility of giving support to students, as requested by the administrator, it was decided to run a specific ICT for education workshop for academic staff in the department. This workshop was aimed at enabling them to be immersed in the current characteristics of online training and implementation, as well as to broaden their views of the use of ICT for their instructional purposes.

Improving instructor's online presence and motivational strategies

Instructors' online presence and participation need to be improved. The presence would not only consist of teaching presence, but also cognitive presence, and social presence (See Section, 2.3.2 for information about online presence). Teaching presence should be materialized through providing more constructive instruction to students learning every time they needed it, responding timely to task-related posts or questions as well as providing more individualized online instruction whenever students needed it. Such teaching presence could be easily conducted through mobile online group communication via WhatsApp messenger. Cognitive presence would be materialized in the form of participation in on-task online discussions, either on the discussion forum or in the WhatsApp messenger group. The social

presence was planned to be conducted more through posting some social-interaction stimulating posts such as internet memes (virally-transmitted cultural or social ideas via the Internet, which can be in the form still or animated images and videos), anecdotes, or some approved personal collections of photos on social media sites such Facebook, Twitter or Instagram. This kind of social presence strategy was to provide students with a more relaxed discussion space, build more attachment to the online group and draw more attention and participation to the online communication. However, such social online posts should be limited in such a way that they would not deviate students' focus from learning.

Furthermore, instructors' motivational strategies need to be improved in the form of providing more structured and detailed feedback. Adopting a specific feedback providing technique such as the feedback sandwich (Gigante, Dell, & Sharkey, 2011) was worth considering during the OCTT Cycle 2. In the feedback sandwich, the instructor would highlight students' achievements and strengths in the beginning, then move on to pointing out aspects they needed to improve on. The feedback was then closed by reemphasizing students' achievements and strengths to build positive thoughts, attitudes and confidence. Some principles in providing feedback, shortened as STOP (Specific, Timely, Objective, and based on Observed behaviours, Plan for improvement discussed with learner), would also be implemented.

Adding necessary topic and experiential learning components to the course

According to the data students were interested in the course content and were generally satisfied about this as they expressed in their comments. However, there were two issues noted and needed to be well addressed in the following implementation of the OCTT prototype. The first issue was that there was still no specific discussion on the ICT-based language learning assessment. The second issue was that though students had been trained to

develop a lesson plan, they had not actually implemented their lesson plans and experienced the teaching language with technology yet.

Adopting and facilitating the user-friendly technology

Students were confused during the initial use of the chosen LMS (Schoology). This was observed to be due to a lack of prior training in the use of the LMS for students. However, while students eventually managed to solve this LMS technology-related confusion, it would have been much better if they had been familiarized with the technology prior to the commencement of the course. It was also important to highlight for the next OCTT implementation that the use of a cloud-based LMS had been very useful since it really freed the instructor up from complicated tasks related to server maintenance and other server-related technical problems.

5.1.7 Draft 2 Principles for developing OCTT

Considering the notes and reflections of the implementation of OCTT prototype cycle 1, there were two principles need to be added to the OCTT design principles: adding more experiential learning activities, and becoming more product oriented. Experiential learning activities were observed as preferred by students. Through hands-on practice in the experiential learning settings, students could be directly immersed in the technology-integrated learning and teaching environment. They could directly observe and experience how technology is used in the teaching and learning process. Experiential learning activities would also help students to avoid boredom due to too much online reading materials. For example when they learned about interactive reading, they could directly experience it and they produced interactive reading exercises using the CALL authoring tools learned that same day. Secondly, the product-oriented principle was seen to be important because students were observed to be satisfied when they managed to create products of their own. They claimed to

be satisfied because they knew that after the OCTT they could create something real for language teaching and learning. These two principles were in line with Knowles' theory that adults are practical learners and thus need to learn and do something practical as well as relevant to their context.

5.2 Stage Two: The Intervention Cycle 2

Learning from the implementation of OCTT in cycle 1, some modifications and additions to the course materials were made for the OCTT implementation in cycle 2.

Modification on the OCTT prototype

The OCTT cycle 2 implementation was not a repetition of OCTT cycle 1. The OCTT cycle 1was labelled CALL-1 in the institute course catalogue while the OCTT implemented in cycle 2 of the study was labelled CALL-2. Thus, the CALL-2 course which was designed to be delivered online, was logically the continuation of the CALL-1. The modification addressed some of the issues found during the OCTT implementation.

The first modification was on the LMS used. This was to address the issue of course accessibility by students due to low internet connections. The chosen LMS remained the cloud-based one since it was proven to be maintenance free. However, the LMS service provider was shifted from Schoology (www.schoology.com) to Haiku (www.myhaikuclass.com). There were not many different features between both LMSs. Therefore, students did not complain. Haiku was chosen in the OCTT cycle 2 because it offers a more intuitive interface, more features such as built-in surveys, a customizable layout, more add-on applications (Apps), user activity statistics and it is easily accessible with low bandwidth.

The second modification was on the discussions and communication among participants of the OCTT cycle 2. Discussions and communication among participants were made available via WhatsApp messenger. Students could easily share their experiences, issues, and contributions via the messenger on their mobile devices. Using mobile messenger students did not necessarily need to turn on their computers, only to share information or respond to discussions posts and questions. Consequently, access time to the online discussion was significantly reduced.

The third modification was related to classroom management, and specifically on the grouping of students when working on assignments. This was requested by the students. In OCTT cycle 2, students were randomly grouped by using a particular web-based tool such as team maker (http://chir.ag/projects/team-maker/). Using the tool students could be fairly distributed randomly in multiple groups. However, this random grouping was also found to be problematic especially when there were students who did not want to work with certain students or groups of students. Consequently, to avoid such issues, a class contract with students regarding grouping practices, prior to the commencement of the OCTT, was made.

Additions to the learning materials and learning experiences

Besides the modification there were also some additions to the learning materials and the learning experience of the students. The materials added in OCTT cycle 2 were to conform to the outlined qualities as mentioned in Table 5.2 and to implement the notes taken during OCTT cycle 1. The materials presented in OCTT cycle 2 include project-based learning, game-based learning (GBL), augmented reality (AR) for language learning, CMC for language learning and teacher professional development, computer-assisted assessment, introduction to the learning management system, and from CALL to Mobile Assisted

Language Learning (MALL) (see Appendix F for the sample syllabus of the OCTT cycle 2). The addition of Problem-Based Learning (PBL) in OCTT cycle 2 was to address the mandate of the Indonesian ministry of education. The ministry suggested that the PBL should be adopted by teachers as one of the learning approaches in implementing the 2013 Indonesian national curriculum (Mulyani, 2013). The curriculum was officially implemented in schools in Indonesia during the time of the study. Therefore, preparing the students (pre-service teachers) to be ready for PBL-based learning was believed to be necessary.

In addition, the introduction of augmented reality for the language learning and game-based learning topics were to meet the recommendation of the qualities as listed in Table 5.2, to use up-to-date technology. This meant that the knowledge and skills of both students and teachers should always be updated with currently available technologies for learning. Thus, the introduction of AR in language learning and GBL was seen to meet this recommendation. Interestingly, most students specifically mentioned that the topics were interesting and they identified the two topics as "spicing up their online learning process", because this technology was relatively new to them and of their interest. At the end of the course they could produce their own AR apps, games and lesson plans on how to implement them (See an example of AR Apps and games created by the students and their lesson plans in Appendix J). Though their products may not be perfect yet, they have proven that they understood the concept of AR and Game-based learning as well as experienced making and applying them to teaching practice.

Computer-Mediated Communication (CMC) for language learning and ICT-assisted Teacher Professional Development (TPD) were introduced to equip them with knowledge and skills necessary for their online communication. The potential of CMC for language learning and TPD was very important since instructors and students mostly communicate using CMC today. During the observation students and instructors on the research site were

observed as using the internet-based chat messenger for daily communication. Also, CMC was believed to be useful for students in the process of learning in the future. People today live with CMC. Sending email, posting in online discussion groups, updating statuses in social media, sending short message service (SMS) text, audio and video, and calling via applications such as Skype, FaceTime, and Viber are common modes of communication today. Therefore, it was vital to direct them to learn the potential of CMC either for language teaching and learning or for their own continuous professional development.

Computer-assisted assessment and introduction to the LMS were necessary to be introduced. The introduction of these two topics concluded the students' ICT-assisted learning experience during OCTT cycle 2. The discussion of these two topics included preparing lesson plans and implementing them through online teaching practice. Thus, by the end of the OCTT students would have the knowledge, skills and experience needed to use ICT for language teaching. The latter two topics were actually meant to address the notes taken from the previous OCTT about the lack of teaching experience and assessment knowledge that students had. For the results of online teaching delivery practice by students see the sample screenshot of their LMSs in Appendix I-2. In total there were 14 lessons delivered by students in groups, using three kinds of LMSs: Haiku (https://www.haikulearning.com/), Schoology (https://www.schoology.com), and Edmodo (https://www.edmodo.com/). Their lessons were language lessons ranging from English, Japanese, and Indonesian. Based on their created online lessons, the students were observed as skilful enough in planning the lessons, as well as in optimizing the use of LMS features.

Lastly, the students' OCTT experiences during OCTT cycle 1 and 2 were completed with specific discussions on the current trends in learning through mobile devices. For that purpose, a specific presentation of selected web-based materials on mobile-assisted learning was deemed to be necessary to be allocated. This discussion topic was also of students'

interest since they realized that nowadays they depended a lot on internet-connected mobile devices. They realized that sending and receiving information on their mobile devices reduced the time significantly because unlike personal computers, which take time to boot, mobile devices are always on and instantly display messages once they arrive.

In terms of learning activity, besides the introduction of online teaching practice, in OCTT cycle 2, students were introduced to the built-in online survey in the LMS (See Figure 5.2). This survey produced very interesting feedback for both students and the instructor. Some topics surveyed were online training preferences, game-based language learning, instant messenger preferences etc. Students found this small survey an interesting activity because they could immediately see what others actually thought about certain topics. The simple and colourful graphical representations of the survey results were very interesting to students. Though the topics in the survey might have been somewhat trivial to the discussion of content during the OCTT, this survey activity certainly added to students' attachment to online learning.

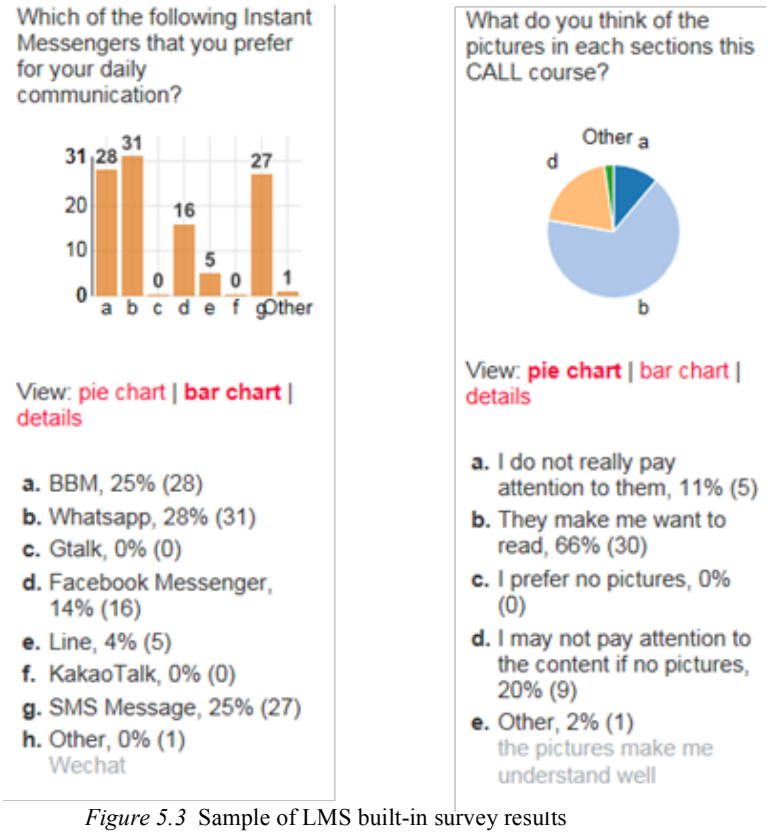

Figure 5.3 Sample of LMS built-in survey results

Workshop for staff on technology for education

One more element to complement the lack of support during the OCTT cycle 1 as previously noted, was the delivery of a workshop for academic staff members on the research site. The workshop, as previously mentioned, was intended to equip them with necessary knowledge on ICT for education. The purpose of the workshop was to equip them with necessary knowledge and skills on ICT use for education. It was expected that later on with such knowledge and skills, they would be able to take part in supporting students whenever they need help with the ICT-based learning, including online training. Through the workshop, the staff members were motivated and directed to enrich their knowledge about ICT use for education as well as to support the effort of online teacher training development. This effort was also to build an ICT-based learning milieu in the research site so that people there would feel at ease in sharing knowledge about the use of ICT for education. During the workshop, the staff who attended were academic staff teaching foreign languages. There were about 32 staff teaching English and Arabic as foreign languages who attended the workshop. (See Appendix K for the Workshop Session Plan).

5.3 Summary

The intervention process on the existing CALL course has been described in this chapter. The intervention which was in the form of the implementation of an OCTT prototype in two cycles has been elaborated on. The process of the OCTT prototype development as part of the intervention process has also been discussed, from generating design principles, developing standards to achieve in the OCTT course, to the delivery of the OCTT course. The results of the intervention, which was conducted in two cycles of OCTT prototype implementation, has also been reflected on and presented here.

Chapter 6: Discussion

In the previous chapters, the findings and intervention process have been presented. All data within the chapter, collected through interviews, surveys, observation, and document reviews, help in strengthening and validating the findings. In this chapter the findings will be discussed to address the research questions that have been guiding the study. In addition, links to previous studies will also be made whenever and wherever possible. The discussion will be presented based on the research questions. Firstly, there is a discussion about "What factors are affecting the implementation of online CALL teacher training at a TTCo in Indonesia?" Then, having identified the affecting factors (both facilitating and inhibiting factors), the discussion will be directed to address the second research question which is "To what extent does the online CALL teacher training equip language teacher trainees with specific knowledge they need to integrate ICT in their language classroom?" Then finally, to meet the aim of the study, which is to find ways to improve the current practice of online CALL teacher training, the discussion will address the third research question which is "How can online CALL teacher training in Indonesia be improved in terms of training materials, activities, and the administration of the training?"

6.1 What are factors affecting the implementation of online CALL teacher training at a TTCo in Indonesia?

The term affecting factors refers to both facilitating and inhibiting factors which were focused on in this study. Information regarding these factors was later used to inform the development of OCTT in the site of this research project. The affecting factors identified during the study are summarized in Table 6.1. Further elaboration on those factors is presented in the following sub-sections.

Table 6. 1 *Factors Affecting Online CALL Teacher Training at a TTCO in Indonesia*

Category	Affecting Factors
Students	▪ Students' beliefs and attitudes towards online training and technology-assisted learning ▪ ICT knowledge, skills and interest ▪ Time management and online learning skills
Instructors	▪ Instructor's positive beliefs about online training ▪ Technological confidence ▪ Motivation and commitment ▪ New learning style confidence ▪ Qualification and competence ▪ Time
Course	▪ The availability of standards for delivering a course ▪ Addressing local needs and expectations ▪ Adoption of adult learning theory, constructivism theory and the TPACK framework ▪ Adoption of online learning model ▪ Adoption of OER
Technology	▪ The accessibility, reliability and the operability of the technology used
Support	▪ Timely feedback ▪ Type of activities ▪ Prior training on technology used and online learning skills ▪ Support by staff and through policy

6.1.1 Students

Table 6.2 *Factors Affecting OCTT in Student Category*

Category	Affecting Factors
Students	▪ Students' beliefs and attitudes towards online training and technology-assisted learning ▪ ICT knowledge, skills and interest ▪ Time management and online learning skills

In this category a number of factors were observed as having an influence on the implementation of online CALL teacher training (see Table 6.2). A brief discussion on those factors based on the previous findings reported in Chapter 4 are presented below.

Students' beliefs and attitudes towards online training and technology-assisted learning

Students indicated positive attitude towards the use of technology for language teaching. They all agreed that they would like to use computers for classroom instruction, because they already felt comfortable with computers and enjoyed using them. In addition to believing that they could improve their teaching performance by using computers, they also thought that learning a foreign language using computers could make the learning process interesting and could motivate them to learn. Besides such positive beliefs on the use of technology, 66.2% of students also believed that learning online could motivate them because they could study anytime and anywhere as long as there was an Internet connection. Students, therefore, actually were already aware of the potential of technology for teaching, learning, and even for their personal development. Students were aware that they needed to learn how to use technology for teaching and therefore, showed 100% agreement with the survey question saying that CALL teacher training should be integrated in teacher training programs.

Students believed that by learning online they could access learning materials, lectures, discussion, and comments as required. Students asked for timely and continuous support because they always wanted to feel that they were part of a community. This confirms Mbarek and Zaddem (2013) and Muilenburg and Berge (2005) findings, that in learning online students need social communication and social interaction. Therefore, timely and continuous feedback by either the instructor or peer students was seen as necessary. One way to provide continuous feedback was by providing synchronous discussion tools as they required. One form of synchronous discussion tool that was used during the study was a WhatsApp messenger group. Most students and staff use this application on their mobile devices for communication. This application also enables mass communication, thus online discussion was also possible through this application. As seen in Chapter 4 section 4.5, there

were 539 posts with an average response rate of less than 15 minutes after a post was made online. This showed that the WhatsApp-mediated discussion seemed to be a good medium for online interaction among students. This was supported by Pelz (2010) when he mentioned that interaction is the heart and soul of effective online instructions (Pelz, 2010).

ICT knowledge, skills and interests

Students were generally ICT literate already; only 1.4 % of the students had less than a year experience with computer. They were all identified as having necessary computer knowledge and skills. They could perform necessary computer-related tasks such as file management and operating office, multimedia, and communication applications. This underpinned their satisfaction and success in a technology-rich learning environment. The more technology capable the students are, the less technology anxiety they may experience in a technology-rich learning environment (Chien, 2008). According to Sun, Tsai, Finger, Chen, and Yeh (2008) technology anxiety is one of the critical factors that affect students' satisfaction in learning in such a technology-rich learning environment.

Evidence from the direct observation indicates that there was growing interest on the part of students and staff in the use of ICT for completing daily tasks. Such interest should be supported to assist teachers in integrating technology in their classroom instruction. Realizing the phenomenon, the administrator also suggested that staff should upgrade their knowledge and skills in ICT. An effort to address this suggestion was made by delivering a specific workshop on the relevant topic. The workshop promoted the online training idea and support for the effort of online training study and establishment (See the last part of Section 5.2 for a brief discussion of the workshop).

Time management and online learning skills

Students do not specifically schedule time for online learning. Many students tend to

work on assignments at the last minute before the assignment submission deadline. This implies that they still have a lack of awareness about the importance of time management in online learning. In chapter 4, survey results indicated that 46% of students did not specifically schedule specific time for online learning. Students felt that online learning was difficult, confusing and a burdensome process. This could have a negative influence and they could fail in online learning as a result. This finding confirms Banegas and Manzur (2014) and Keengwe and Kidd (2010) who found that time management skills are a crucial factor affecting the success of online learning. To address this, a necessary workshop on online learning skills, including time management skills, needed to be delivered for the students and instructors prior to the commencement of online learning.

6.1.2 Instructor

Table 6. 3 *Factors Affecting OCTT in Instructor Category*

Category	Affecting Factors
Instructors	▪ Instructor's positive belief in online training ▪ Technological confidence ▪ Motivation and commitment ▪ New learning style confidence ▪ Qualification and competence ▪ Time

In this category six factors were identified as affecting the OCTT implementation (see Table 6.3). Elaboration on each of the factors is presented in the following sub sections.

Instructor's positive beliefs about online training

When training, online instructor's positive beliefs about online training are a crucial factor in the success of their instruction. According to Klieme and Vieluf (2009) the teachers' (instructors') beliefs are closely linked with their strategies to cope with their teaching challenges. Therefore, it is an important asset that instructors should possess in order to be

successful in their teaching. From the interview with instructors in the study, all instructors showed positive beliefs towards online training and technology-enhanced training for students. Such beliefs confirmed that they were ready for implementing or learning to integrate technology in their instruction. The effort of implementing OCTT during the study was supported and the sustainability of OCTT was thus theoretically assured.

Technological confidence

In addition to the teachers' beliefs, Anderson (2008) identified five factors related to teachers that might affect online learning or teaching: technological confidence, motivation and commitment, new learning style confidence, qualification and competence and time. In terms of technological confidence, all instructors showed good knowledge and functional skills in ICT. From the interviews and observation, it was evident that they all showed goodwill and interest in technology-assisted teaching and learning such as CALL. All of them were familiar with ICT and computer-mediated communication, though not all of them had undergone specific education on how to use technology for teaching languages. Only one instructor had been specifically taught CALL during his master study. Yet, the three of them had had experiences with online learning, which was quite a good start in sharing online learning experiences with students. The experience with technology surely affects instructors' confidence in using technology and eventually affects their students' learning process as well (Anderson, 2007; Bhati et.al, 2010).

Motivation and commitment

The instructors believed that it was important to integrate technology into a teacher training program. Such belief was an important factor that motivated them to succeed in their online training. A local instructor for example strongly suggested that it was already time to teach student teachers how to use technology for teaching because they had already been

living with technology. Another instructor even believed that students were becoming more efficient technology users. They relied mostly for their daily tasks on technology. The instructor believed that since those students were future teachers when technology use would be inevitable, they should be prepared to use technology wisely for their teaching and learning purposes later during their career. This idea was actually in agreement with Hubbard (2008) reporting that teachers who were capable of using technology for performing their duties were increasingly wanted. Therefore, it is important to prepare teachers to be ready to integrate technology for their teaching careers.

Despite limited prior educational backgrounds in CALL, the local instructors claimed that they kept on upgrading their CALL knowledge and skills. They made this effort in order to help the teaching of CALL teacher training courses in the institute succeed. Their effort supported the successful implementation of the OCTT prototype through providing continuous motivation to students to learn online and consultation for both the researcher and the students. The local instructors' effort to keep upgrading their CALL knowledge and skills were in line with Robb's (2006) idea suggesting that teachers should keep on self-educating, in order to cope with the ever developing challenges of technology and pedagogy, especially in relation to language teaching and learning.

New learning style confidence

Their interest and effort to keep exploring the use of technology for teaching through social media and MOOCs was evidence that they began to feel confident with technology for both learning and teaching. Excerpt 4 (See section 4.1.1) showed an example of how they uses Web 2.0 technology such as YouTube for their own learning and teaching. They admitted that technology offers a lot for learning such as easy access to obtain and distribute materials for teaching. As Manno and Shahrabi (2010) stated, technology, especially Web

2.0, has changed the way people interact with and obtain knowledge. Therefore, it was important that instructors familiarize themselves with technology in order to benefit most from using it in their teaching and learning for their personal development in the future.

Qualifications and competence

Instructors' qualifications and competence are also another factor in the success of online training. In this study, due to limited local instructors' knowledge and experience on effective and engaging online training, expert assistance to deliver an online course during the OCTT prototypes was needed. The help was in the form of directing the OCTT process intervention by collaboratively designing the prototype course, delivering the course, as well as administering the implementation of the course. The results indicated that students were satisfied with the OCTT processes, as evidenced from the interview results (see section 4.1.4). An online CALL teacher training syllabus was also developed. Furthermore, the online training milieu was also developed through the delivery of an ICT for pedagogy workshop for academic staff, as requested by the administrator in the institute (see Section 5.2). This workshop was to motivate and equip the staff to participate in the online training program and any other ICT-supported professional development program in the future. In a similar vein, regarding the need for staff involvement in professional development programs, Hooker (2008) strongly suggests that such involvement is necessary to assist in the achievement of program success.

Robb (2006) suggests that self-professional development by the staff should keep continuing in order to adapt to the ever-developing technology. It was suggested to the institute that access and opportunities for such professional development should always be made available so that staff and local instructors could keep on learning to help themselves whenever challenges were encountered during their work. The challenges which are

potentially caused by the ever-developing technology will keep forcing teachers to upgrade their knowledge and skills. Administrators should prepare and motivate them to be ready to adapt to such challenges. Thus, the focus of any technology training or workshop for students, instructors or other staff should be on equipping them with knowledge and skills to discover and participate in a technology-related community of practice relevant to their area. According to Hanson-Smith (2006) such focus is one way to support their continuing professional development. In line with this, the workshops for staff and the OCTT were always aimed at helping them learn how to learn to solve technology-related problems through problem-based and collaborative activities. Both the OCTT and workshop were aimed at making students and staff aware that one of their goals in learning technology is not only to master technology and use it for their work, but also to help them become individuals who are collaborative, problem-solving, and creative learners through using ICTs. Ultimately, they will be effective citizens and members of the workforce (UNESCO, 2015).

Time

Time is another instructor-associated factor, affecting online CALL teacher training. Online teaching and learning is a time intensive effort (Bhati et al., 2010; Keengwe & Kidd, 2010). Instructors need to schedule specific time to prepare materials, respond to questions, provide feedback on students' performances, and evaluate performances. All should be performed and be compatible with the technology which often requires some time to master. In this study it was noted that time has drawn serious attention of the students and instructors. Students demanded timely feedback from both the instructor and their peers. This finding corresponds with Gaytan and McEwen's (2007) finding in their study of the same phenomenon. In order to provide timely feedback then, instructors need to find a specific

technique in order to be always in touch with students. In this study, the use of a mobile device friendly LMS is one of the choices to support this timely feedback idea.

Another technique which was chosen to provide timely feedback was the use of internet-based mobile chat messenger such as WhatsApp messenger. Through this mobile messenger, online discussions and communication could always be accessible 24 hours and 7 days a week. This cheap, reliable and handy solution for mobile discussions was preferred by students since it was time and cost effective. Most important of all, with the use of WhatsApp messenger for online discussion, students no longer felt alone while learning online. The feeling of being in a community, required by some students during the online training/learning sessions as put forward by Banegas and Manzur (2014), was much more ensured in this way. Yet, as Banegas and Manzur (2014) suggested, though some students may expect the feeling of being in a community while learning online, it is not impossible that other online learners prefer a more individualized learning process rather than working in groups or with others.

6.1.3 Course

In this course category, six factors were identified to be affecting the OCTT implementation during the first and second cycle. Table 6.4 lists the factors that are elaborated on below.

Table 6. 4 *Factors Affecting OCTT in Course Category*

Category	Affecting Factors
Course	▪ The availability of standards for delivering a course ▪ Addressing local needs and expectations ▪ Adoption of adult learning theory, constructivism theory and the TPACK framework ▪ Adoption of online learning model ▪ Adoption of OER

The availability of standards for delivering a course

It is necessary to adopt specific standards for designing and delivering a CALL course. As suggested by Hubbard and Kessler (2008) the availability of standards assist in providing best practice in CALL in various different settings. In this study, a specific adoption of various standards was made. Adoption of standards from various available ones was designed to make sure that the standards adopted later were contextual (See Section 5.1.2 for the specific discussion on the Standards development during the study).

Addressing local needs and expectations

At the beginning of OCTT prototype development, a specific standard for OCTT development was determined. The standard was meant to address local needs and expectations such as government requirements and students' expectations. Park and Choi (2009) assert that students' expectations should be carefully met to keep on motivating them to learn online. In this study a number of efforts were made for such localization purposes such as adapting the local ICT for teacher framework, as suggested by Purwanto et al. (2012) and the government ordinance no. 8/2012 on national qualification framework. Another localization effort made in this study was adapting course content from the widely available OER. This adaptation was made to suit the students' expectations of a CALL course. They expected the CALL course to guide them to obtain knowledge and skills which were relevant to their teaching jobs in the future. They expected that they could directly use the learned CALL knowledge and skills in their instruction once they finished the OCTT (See Section 4.4: *Students expectation towards the CALL course*).

Adoption of adult learning theory, constructivism theory and the TPACK framework

Meeting students' expectation means also considering their learning needs as adults. In this study it was specifically focused on adults. In Section 2.3.2 there are some points from Knowles's Andragogical Model about adult learners saying that adult learners are autonomous and self-directed and therefore should be given the opportunity to be responsible for their own learning. This may imply that extensive step-by-step guidance may not be necessary for them. It will be much more meaningful if they are only provided with a pathway of what to learn rather than a detailed manual. Equipping them with tools, knowledge and skills to learn a specific topics is much more important rather than just providing step-by step tutorials on specific topics. As an example for the implementation of this idea, in the OCTT prototype syllabus (See appendix F Session 4 and 5), the students were specifically trained how to search for information online, and how to evaluate and manage the information through making a digital mind map or timeline. By equipping students with learning tools such as how to effectively use search engines students were observed to have creatively used search engines whenever they found problems when learning online. Technical problems for example, were often handled by students themselves through searching solutions on the Internet (see also section 5.1.5: Excerpt 13).

In addition to adherence to adult learning theories when developing the OCTT prototype, other theories were considered in this study, such as constructivism and TPACK. Adoption of constructivist theory was manifested in the design of online learning activities where students were asked to work collaboratively to solve specific problems. Through collaborative work, social interaction occurred. Then, through such social interaction students were assisted by their peers and instructors, especially in receiving and processing information. Accordingly, the social constructivist process, as discussed in Kaufman (2004)

and Powell and Kalina (2009), occurs in such collaborative learning. Another factor that affected the students' online training was the distribution of materials and choices of learning activities. The TPACK Framework suggested by Mishra and Koehler (2006) helped in mapping the distribution of knowledge and skills to be mastered by students (For an example of how materials and skills were distributed throughout the OCTT course prototypes based on the TPACK frameworks see Appendix F).

Unlike the previous CALL courses at the research site, which were focused mostly on the theoretical aspects of CALL, as can be seen from the instructors teaching document (see observation result section 4.4) and the technical aspects of CALL only, the two prototypes of OCTT, of which the materials and activities were designed based on the TPACK framework, seemed to have assisted students in achieving the developed standards for OCTT (see section 5.1.2: *Determining standards for OCTT*). The post OCTT survey results showed students' satisfaction about their OCTT experience as well as positive beliefs and attitudes towards the use of ICT for language teaching and learning (see Table 4.10). Over 50% of the students indicated that they had gained knowledge in ICT and how to use it for educational purposes. Therefore, they recommended the use of ICT for education. Their recommendation is also an indication that they held positive beliefs about the use of ICT for education.

Adoption of online learning model

Another factor that has assisted in the process of OCTT delivery was the adoption of an online learning model. Koontz, Li, and Compora (2006) suggested the need for adopting specific online instructional models in designing effective online instruction. Considering such a suggestion, a number models were reviewed (see section 2.3.2: *Online instructional models*) and choices were made about how they might be adopted in the implementation of the OCTT in the study. Eventually, a model by Salmon (2013) was the one that was adopted

due to various reasons that have been mentioned in chapter 4 (see section 5.1.2: *Determining standards for OCTT*).

Adoption of OER

The adoption of OER in this OCTT was found to confirm what Hodgkinson-Williams (2010), Thakrar, Wolfenden, and Zinn (2009) and Wheeler (2010) said about what the use of OER offers in terms of benefits such as exposing instructors and students to authentic resources from around the world as well as saving the instructor's time to develop materials. The OER was also useful in broadening the views of the students especially on a practical level. Through the use of OER students could directly learn from others' experiences (see Appendix G). The appendix shows how students were provided with access to OER created by others in the form of YouTube video clips. The use of OER also equipped students with necessary knowledge to keep on developing their professionalism even after they finished the course (Hodgkinson-Williams, 2010). An example of such an OER-assisted lifelong professional development practice assigned to students during the OCTT course can be found in Appendix H-6 and H-7. In the Appendix it is shown that in response to the given assignments, students could also contribute to knowledge via their personal blogs. Moreover, they could keep on upgrading their knowledge by participating in a massive open online courses (MOOCs).

The use of OER, however, is not without challenges. There were times when the instructor in the study found difficulties in finding relevant OER to support the delivery of specific topics to discuss. Such difficulties confirm Thakrar, Wolfenden, and Zinn's (2009) assertion that there is in fact an issue of discoverability pertaining to OER. Hodgkinson-Williams (2010) point out that the challenge of using OER is partly associated with technical skills. During the implementation of the two OCTT prototypes, there were times when

students' technical skills were challenged especially in dealing with the provided OER, for example when they had to do the web portfolio assignment and set up their own LMS. Yet, they eventually manage to do the assignments and deal with all OER involved in the assignments (see Appendix I for samples of their created online lessons).

6.1.4 Technology

Technology is one of the most crucial factors in the success of online training. Therefore, during the design of the OCTT one of the considerations was the accessibility, reliability and the operability of the technology used. In the selection of the LMS for example, among the set criteria (see Table 5.6 at Section 5.1.4) for LMS selection, six criteria (Criteria No. 2, 3, 4, 5, 7, and 8) were chosen to assure that the LMS technology used was accessible, reliable and operable by both student and teachers. During the implementation of the OCTT prototypes, Internet connections were often found as distracting students' attention from learning online and thus often became a problem for students participating in the OCTT. During the implementation of OCTT, The LMSs used were the ones which did not consume much bandwidth and were mobile device friendly such as Schoology and MyHaikuClass. In addition, the LMS selected should also cater for students' needs such as the need for collaboration via discussion boards, wikis, emails, shared spaces etc. (Hoffman, 2004) and most importantly, it should be free from technical problems (Anderson, 2008).

6.1.5 Support

Under the support category, four factors were identified as affecting the first and second cycle of the OCTT implementation. Table 6.5 lists the factors under this category.

Table 6.5 *Factors Affecting OCTT in Support Category*

Category	Affecting Factors
Support	▪ Timely feedback ▪ Type of activities ▪ Prior training on technology used and online learning skills ▪ Support by staff and through policy

Timely feedback

It has been previously mentioned that timely feedback is very important for students. It is another form of support that should be provided for online learners by either the instructors or the online students' peers. Through timely feedback students would be given much opportunity to benefit from the online courses (Bailey & Card, 2009). They required such feedback because they needed to be sure that their participation online and their work were read by instructors or by their peers. Moreover, they felt that they were in communication with others when they received feedback. As a consequence, they no longer felt that their online learning effort was not appreciated by others. The use of mobile discussion during OCTT Cycle-2 made the provision of timely feedback even easier because both instructor and students could easily communicate anytime and anywhere using their mobile devices. Unlike using personal computers, which take time to turn on, the use of mobile devices, which are always on, made posting questions and receiving feedback very handy tasks.

Providing necessary support to make students feel that they were not learning alone was important (Herrington, 2006). To enable such support the choice of technology used in the online training and the types of activities needed to be well considered by online learning designers. Mbarek and Zaddem (2013) underlined that the technology used may affect students' perception about the online learning process and consequently may affect their

learning outcomes. Therefore, careful consideration of the choice of the technology used should be made.

Types of activities

The next factor that may facilitate support for learners are the types of activities. The activities chosen should be ones that enable students to have easy access to various types of support during the training process. An example of such activities are those that require collaboration among students as peers. In such collaborative activities, support can be provided by either instructors or peers. During the implementation of the OCTT prototypes, many assignments were designed that required students to collaborate online. This type of assignment was meant to give them opportunities to experience online collaboration which is mentioned as one of the essential skills that 21 century learners should possess besides critical thinking and problem solving skills (P21, 2011).

However, as Banegas and Mazur (2014) state, there may be students who prefer working alone while in an online course. Therefore, balancing between giving students individual work and collaborative work during online training is important for them. Nevertheless, for the purpose of the OCTT in the study, it was argued that since being able to communicate and collaborate with others are important skills to be successful in the 21st century (P21, 2011) and with reference to the Indonesian teacher ICT competence framework (Purwanto et al., 2012), students needed to be trained to get used to working collaboratively. Moreover, according to UNESCO (2015) "it is not enough for teachers to have ICT skills and be able to teach them to their students. Teachers need to be able to help the students become collaborative, problem-solving, creative learners through using ICT so they will be effective citizens and members of the workforce". Consequently, facilitating students to get used to working collaboratively was seen as necessary in the OCTT.

During the implementation of the OCTT prototype students were observed as seemingly enjoying learning with others and working collaboratively to solve problems related to either technology or course assignments. Their complaint was not about the collaborative tasks but about the grouping, which they found rigid during the OCTT cycle-1. They did not find it comfortable working with the same people in the same group throughout the semester. Therefore, random regrouping was implemented for every different assignment given during OCTT cycle-2.

Prior training on technologies used and online learning skills

Another form of support can actually be provided to students and even teachers in the form of prior training on both technology and online training skills. However, during the implementation of the OCTT there was very little opportunity to provide such training. As a result, it was noticed that due to lack of prior training during the implementation of the OCTT prototype, students were found in confusion when making their initial posts, especially during the initial stages of the OCTT implementation. Some authors (e.g. Bhati et al., 2010; Ko & Rossen, 2010; Sun et al., 2008) have identified the need for prior training before the commencement of any online courses. Such prior training can be focused on online learning skills, using features of the technologies that are used during the training, online collaboration skills, information searches, online pedagogy for instructors etc. Prior training is necessary for the online instructor who will conduct the online course. Such training is crucial, especially if the instructor is not the one who designed an online course that utilizes a lot of technological tools. Familiarity with the technology and the pedagogy used for the training is important for the instructor. Lan et al. (2012) suggest that in technology-rich teaching and learning environments teachers should master the knowledge, the technology, the pedagogy, and the content to teach. Many teachers probably have no problem with the content they are

aiming to teach, but the technology as the tool to deliver the content and how to deliver the content (pedagogy) in a 'new environment', such as online environment, are elements that they probably need to be assisted and trained in prior to the commencement of online courses.

Support by staff members and through policy

Lastly, support by staff, both academic and administrative staff, can help build better online learning or a more technology-rich teaching and learning environment. During the study, the availability of help from staff was still limited, especially from staff who could provide support with technology. The number of technology support staff on the site was limited. Consequently, accessing help from technology support staff for both students and instructor was not easy due to their limited availability. Yet, this limited technology support made students and instructor improvise and do more research themselves to solve encoutered technology problems themselves, either invidually or collaboratively.

In addition to technology, support for online training can actually be in the form of policy that can be provided by either the institute or the GoI. Luckily, during the implementation of the OCTT prototype, a number of institutional policies were in place to support the online teacher training during the study. There were also some policies regarding the implementation of online training from the government (see section 4.3). However, there was no policy regarding the operational procedures of online training. This resulted in confusion on the parts of both instructors and students. An example of such confusion is the requirement of physical attendance by both instructor and students.Yet, such requirement could actually be negotiated and modified in such a way that eventually the requirement was fulfilled but for a different purpose, which was to support students to learn online. How the physical attendance requirement was addressed during the study is shown in section 4.1: *The implementation of OCTT*

Another form of support that was initiated during the study was preparing academic staff for an ICT-based teaching and learning environment through a workshop on the potential of ICT for education. In this way, they were given the opportunity to contribute by providing support to students or other academic staff on campus. Through this effort, it was hoped that the burden of providing support could be distributed among academic staff and did not fall on instructors themselves. The support they could provide could be in the form of technological or pedagogical support. In this way, the spirit of implementing online training could be grown among them and spread out to other staff at the Institute. Although this was a one-time=only workshop on ICT for education, it has pioneered regular similar workshops to be scheduled on site in the coming years. There has been no formal evaluation yet on the impact of this ICT workshop for academic staff. However, this idea of a staff workshop was actually in line with Gaible and Burns' (2005) recommendation that in a professional development programme motivating all staff to become involved in the program is necessary to develop a better community of practice as well as to increase reliance on one another at the site and thus reduce reliance on external facilitators.

Support in whatever forms as mentioned in this section have been seen very crucial for the success of online teacher training. What is important is that just like Moisey and Hughes (2008) said that the support for online learner should be flexible, clear and continuously available. Any online course developers and other stake holders should always bear in mind that such support contribute much to instructors and online learners endurance to stay working and learning online. Online learners and instructors will be much motivated when they know that actually help is always accessible to them. With the advance of online technology today, such supports should be feasible to provide.

6.2 To what extent does the online CALL teacher training equip language teacher students with specific knowledge they need to integrate ICT in their language classrooms?

The OCTT implementation has been identified as guiding students to develop their potential as teachers who are to use ICT in their teaching. Data from the observation, interviews, and surveys have indicated a number of aspects of the OCTT that contribute to the development of the students' potential. These aspects are:

- Equipping students with necessary ICT knowledge and skills for language teaching
- Maintaining positive beliefs on ICT use for teaching
- Learning theory and experiencing hands-on practice in ICT use for language teaching
- Experiencing using, developing and contributing OER resources.

6.2.1 Equipping students with necessary ICT knowledge and skills for language teaching

Data analysis from the survey taken after the completion of the course reflects students' knowledge and skills on the use of ICT for EFL Teaching (see Table 4.9 in Section 4.2.2). From the results it can be interpreted that the OCTT prototype implementation successfully equipped most students with ICT-related knowledge and skills for the purpose of language teaching. An even more interesting result was that most students knew where to find resources for their continuous professional development. This means that they were already equipped with necessary knowledge of how to keep on upgrading their knowledge and skills in dealing with their career challenges in the future. The OECD (2009) highlights that the most important part of teacher training is to prepare teachers to be able to sustain their self-professional development.

6.2.2 Maintaining positive beliefs about ICT use for teaching

Besides knowledge and skills in ICT for language teaching purposes, the OCTT prototypes seems to have maintained students' positive beliefs and attitudes towards the use of ICT for language instruction. From the survey administered prior to the commencement of the OCTT prototype it was noted that students had already indicated positive beliefs and attitudes towards the use of ICT for language instruction (see Figure 4.1) even before they joined the OCTT. Their positive beliefs and attitudes had not changed post-OCTT implementation (see Table 4.9). The table shows that the mean score of every statement related to positive beliefs and attitudes in ICT for language teaching was still above the average. This means that the OCTT did not spoil their beliefs about the potential of ICT for language teaching or disappoint them with useless and frustrating ICT for language teaching training activities. To avoid disappointment, during the development of the OCTT prototype, in line with Abuhmaid's (2011) suggestion, individual differences among teachers, especially regarding ICT knowledge and skills, was carefully considered.

Data from the interviews with students (see section 4.1.5) also indicated that the OCTT had guided the students to realize the potential of technology for language teaching. The students may have been familiar with computers, as indicated by Table 4.5, but the OCTT introduced them to how computer technology can be useful for teaching and learning especially with regards to language. Ultimately, their description of the OCTT course tended to be positive at the end of the interview (see Section 4.1.4: Excerpt 10) and their positive responses indicated that the OCTT course had met their expectations towards a CALL course and was good input for the development of the OCTT in the study.

6.2.3 Learning theory and experiencing hands-on practice in ICT use for language teaching

Students' work indicated that they actually implemented what they learned in the OCTT, such as language teaching content and technology content. Then, they used that knowledge to produce something that they could use for either language teaching or for their own learning (see Appendix H, I, and J for some samples students' work reflecting on how they implemented what they had learned during the OCTT). An example of this was when they were assigned to produce a piece of writing collaboratively using a web 2.0 tool such as Google drive (see Appendix H-1). Having experienced this collaborative writing themselves, they then tried to adapt the technique for online teaching practice through their self-set up learning management system at the end of the OCTT cycle-2 course (see Appendix I-2). In short, during the OCTT they learned CALL-related theories, they then applied those theories in collaboration with others and facilitated by the instructor, and finally adapted the theories for their own teaching practice experience.

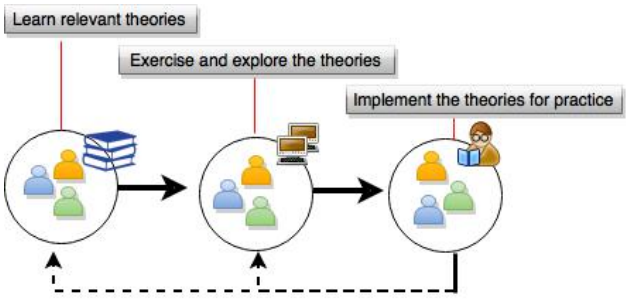

Figure 6.1 Sequence of the learning experience during the OCTT

This learning experience sequence (see Figure 6.1) demonstrated how links between what students learned and their practical needs as adults were realized and how relevancy in what students learned and what they may need for practice was demonstrated. This idea was adhered to during the OCTT activity design. This idea also attempted to accommodate Knowles's assumption that adult learners actually learn better when they see relevance between what they learn and their current needs (Knowles, Holton, & Swanson, 2005).

6.2.4 Experiencing, using, developing and contributing to OER resources

Students' learning outcomes as manifested in their products and work have indicated that students actually mastered necessary knowledge and skills as outlined in the OCTT standards (see 4.5: *Developing Standards for OCTT*). They also contributed to knowledge when they uploaded their work to OER sources such YouTube or Blog Providers. At the end of the OCTT course, since students were assigned to practice their online teaching, they had also created their own online lessons using various available free LMSs such as Edmodo, Schoology, and Haiku. There were 15 ready-to-deliver online lessons, covering various learning materials such as English, Japanese, and Bahasa Indonesia. The students created online lessons that were actually part of their electronic portfolio assessment, together with their personal blogs in which they shared their learning notes, research and ideas, as well as an annotated collection of links to resources for EFL teaching and learning. The portfolio idea in the OCTT was in agreement with Tochon and Black (2007) who state that by having students build their own electronic portfolio they can be facilitated to demonstrate their ability to use a wide variety of technologies in classroom situations. Thus, at the end of the OCTT implementation the students had exercised their knowledge and skills not only in ICT, but also in terms of pedagogy.

To conclude this section, given the designed standards, the OCTT prototypes were delivered to train students at the research site in pedagogy, technology, and content. First, for pedagogy, students were introduced and immersed in the online training activities. They experienced how online training was delivered following a particular model, Salmon's (2013) online learning model. They were also introduced to online training activities such as an online discussion forum, a mobile discussion forum, collaborative work, searching, evaluating and presenting information, lecturing, webinar and project-based learning. Second,

for technology, they were introduced to ICT skills for web research, mind mapping, timeline making, web-based presentations, video conferencing, online collaboration, classroom management, authoring tools, blogging, podcast authoring, and online assessment and augmented reality authoring. Third, for content, during the OCTT students were facilitated to explore topics about beliefs, approaches and strategies for teaching the four language skills (listening, speaking, reading and writing skills), language learning assessment, lesson planning and sustainable professional development.

Figure 6.2 summarizes the materials delivered during the OCTT. Framed by Mishra and Koehler's (2006) TPACK framework, the materials delivered were tailored to meet local expectations. The materials were then delivered following the four stages of Salmon's online learning model as has been detailed in Chapter 2 (section 2.3.2)

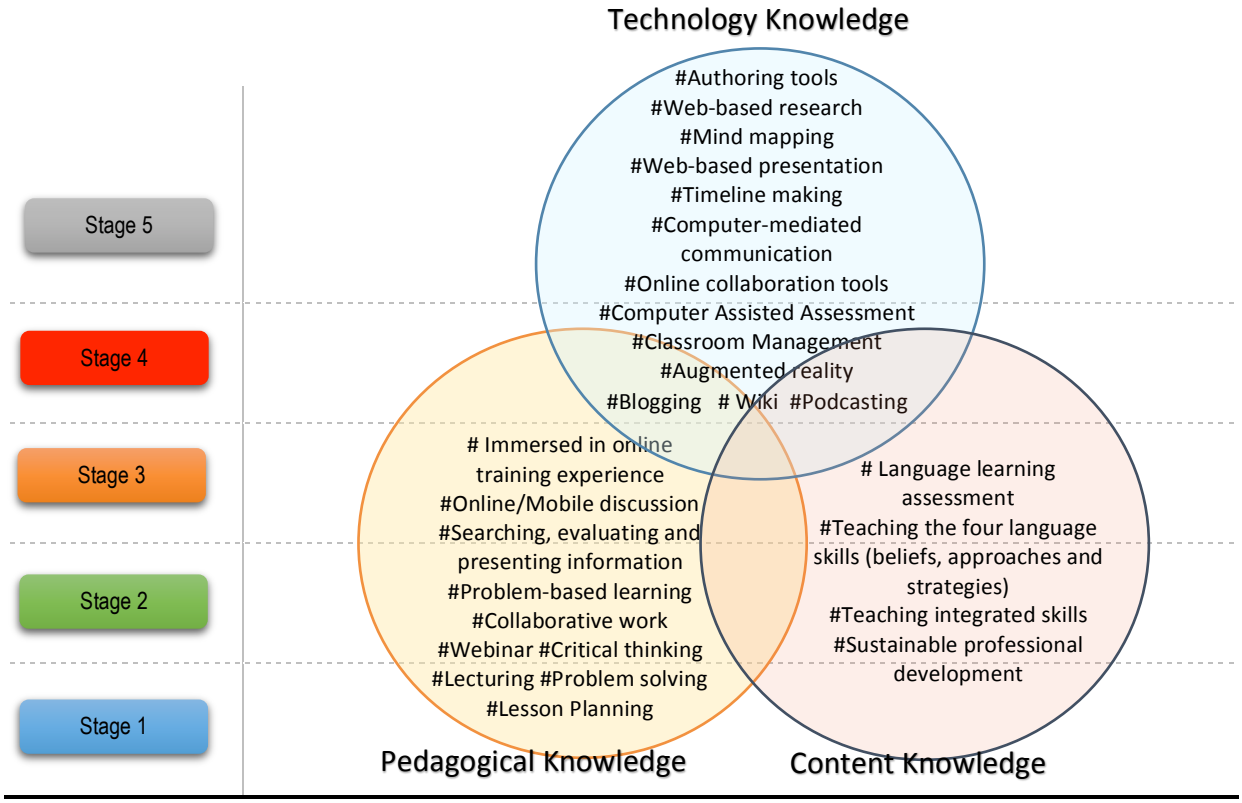

Figure 6.2 Materials and activities for students during the OCTT

6.3 How can online CALL teacher training in the research site be improved in terms of training materials, activities, and the administration of the training?

In the effort of finding alternatives to better deliver the existing CALL teacher training course, the following points were considered to be important to be actioned during the study:

- Identifying possible issues within the existing CALL courses
- Developing standards and principles of the OCTT
- Selecting and balancing learning content and activities
- Adopting learning theories (adult learning theory and constructivism theory)
- Providing necessary support for both teacher and students
- Providing usable and user-friendly technology

6.3.1 Identifying possible issues within the existing CALL courses

Learning from the existing syllabus (see Appendix E) and the results of the direct observation of the CALL teacher training practice (see section 4.4) prior to the commencement of the study, there were at least a number issues that needed to be addressed. First, the syllabus of the offered CALL courses was mostly focused on the theory of CALL though there were some hands-on practices included. Still, there seemed to be little variation in the technology introduced. Second, the technologies introduced were mostly stand-alone CALL applications. This meant that students had to download and install the applications on their machines. These types of applications are outdated today since everything is online and web-based. Third, online learning experiences, which were expected by the GoI and the institute to be facilitated and developed (see section 4.5), were only an additional experience during the course. Online activities designed for students only included downloading materials, class announcements and short discussions.

Fourth, there seemed to be no specific mapping of the content to be delivered in the syllabus in terms of what should be mastered by students: the technology, the content, and the

pedagogy. As previously mentioned, while technology-related topics seemed to dominate the existing CALL syllabus, pedagogy, which should be the main part of the CALL discussion (Compton, 2009; Hubbard, 2008; Kessler, 2006), seemed to be given only a little portion within the syllabus. Fifth, topics related to language teaching were not covered either, while such topics should actually be delivered as part of a CALL discussion. As Koehler and Mishra (2009) argue, in order for teachers to successfully integrate technology in their classroom, they need to learn in practice how technology, pedagogy and content should interact. Thus, for CALL students, learning to integrate these three aspects (technology, pedagogy, and content) in practice is necessary.

Fifth, from direct observation, it was noted that unfortunately the local instructors did not follow the existing syllabus; they rather introduced other materials adapted from other universities or based on their own experiences. These kind of practices were unfortunately not in line with the syllabus already approved by the institute. No further explanation of why the instructors did not follow the syllabus was provided, but obviously it was because of their lack of previous education and experience in learning or teaching CALL.

Addressing the above-mentioned issues in the existing CALL practice was urgent as there were high expectations from the GoI that teachers should be ready to integrate technology in their classroom teaching (Kemendiknas, 2007). With the existing CALL practice there seemed to be much that needed to be worked on to meet such expectations. During the DBR study some effort was made to address the above mentioned issues, which were meant as initial steps to improve the current practice of CALL teaching on site. To do so the first step taken was choosing an online mode for the CALL teacher training. The choice was to accommodate both the government and the institute expectations to deliver courses online. In addition to that choice, in this section, another series of efforts that were conducted will also be discussed.

6.3.2 Developing standards and principles of OCTT

Having learned some possible issues and factors affecting the implementation of online learning and online teaching as have been presented in section 6.1 above, the next step was to develop standards for the OCTT. The developed standards were later used as a reference for setting the aims and goals of the OCTT. Hubbard (2008) suggests that the existence of standards is important in order to appropriately direct CALL teacher education. Developing standards based on the already existing technology for teachers' standards was seen as a significant step in the OCTT design (see Section 4.5: *Developing standards for OCTT*). During the development of the OCTT prototype standards, three aspects were considered: first, the contextualization factors (Midoro, 2013, Anderson, 2008); second, technology competence standards for teachers (ITEA, 2003); and third, technology and pedagogy standards (Compton, 2009; Hubbard, 2008; Kessler, 2006). The contextualization factor was seen to be important in order to address the local needs. Contextualization in this OCTT was manifested in the form of adapting local standards, such as the Indonesia ICT competence standards and Presidential ordinance NO. 8/2012 on the Indonesian National Qualification Framework (INQF). The adaptation was made to suit the local technology, resources and local demands on teachers' competence related to ICT and pedagogy.

The developed standards were of the same importance in guiding the development of the OCTT prototype. Principles for this purpose were then generated based on the existing literature (see Section 4.5: *Draft 1 Principles for developing OCTT and Draft 2 Principles for developing OCTT*). The principles were subsequently used as reference when developing the OCTT content and activities. The content itself was mostly adapted or just taken from the ready-to-use OER available on the Internet. Using the ready-to-use OER is certainly not without any challenges. However, with some careful selection and consideration, those

challenges can be overcome and minimized (for further discussion on the benefits and challenges of using OER, see section 2.3.2: *Open Educational Resources*).

6.3.3 Selecting and balancing learning content and activities

The decisions around content and activities selection were based on the TPACK framework, adult learning theories, and constructivism theories. The TPACK framework helped to balance and vary the delivery of the materials and activities. Using the TPACK framework, knowledge and skills related to technology, content, and pedagogy were mapped and the materials to learn those knowledge and skills were prepared for the OCTT. In this way, the OCTT could be focused on delivering balanced knowledge and skills in terms of technology, content and pedagogy (See Appendix F for a sample of how the technology, pedagogy, and content knowledge are distributed across the OCTT course). With such mapping of knowledge and skills, the OCTT addressed Mishra and Kohler's (2006) concerns about the wide spread tendency to look at only the technology and not on how to use it for educational purposes.

6.3.4 Adopting learning theories (Adult learning theory and constructivism theory)

It was considered that adult learning theories were important in preparing the content and activities for the OCTT. Such theory was seen as important because the OCTT should at least cater for adults' learning styles, needs, and strategies. Since the participants of the OCTT at the research site were adults, developing OCTT based on adult learning theory was seen as crucial (for a discussion of adult learning theory see Section 2.3.2: *Adult learning theory*). Besides adult learning theory, constructivism theory also underpinned the choice of activities, for example in the form of problem solving and collaborative work. Constructivism theory was also found to be useful in directing the selection of LMS which functioned as the shared virtual space for both students and teachers to conduct the teaching and learning

process (Hoffman, 2004). It was useful because it informed the decision making during the LMS selection which involved searching for an LMS that offered features enabling socialization and collaboration among students. According to Vygotsky's social constructivism, socialization and collaboration are important processes through which learning occurs (Kaufman, 2004; Powell & Kalina, 2009). The LMS, therefore, according to Bryceson (2007), is one of the successful mechanisms that can stimulate social interaction to happen and thus assist students' learning to occur. Therefore, it should be carefully selected and those processes should be facilitated.

6.3.5 Providing necessary support for both teacher and students

Once the content and activities of the OCTT were prepared and the delivery was confirmed through the online mode, what was important to assist in the success of the OCTT was the availability of support for both the instructor and the students (Anderson, 2007; Bhuasiri, Xaymoungkhoun, Zo, Rho, & Ciganek, 2012; Bhati et al., 2010). During the study two kinds of support were perceived as important. Firstly, this included legal support. It was important to guarantee that the commencement of the online course would not violate any governmental or institutional rules. Secondly, it involved the support from the administrator especially with regards to the logistics of the course, ranging from ICT facilities, provision of relevant documents, and meeting facilities. For students, ICT support was necessary, since they tended to solve their ICT related problem themselves. Though self-solve effort is important for students' learning, in terms of other ICT related problems, such as WIFI coverage and network security issues, students were still in need of ICT support. Students were also in need of more general support when learning online, especially to help them feel that they were not learning alone while online. For this reason, the utilization of synchronous text-based mobile communication (such as via the WhatsApp mobile group discussion)

during the OCTT cycle 2 seemed to have answered such students' needs of getting immediate support either from their peers or from the instructor.

6.3.6 Providing usable and user friendly technology

Lastly, the reliability of the technology used during the OCTT was of utmost importance (Bhati et al., 2010**)**. During the study the Internet connection was mentioned by many students as one of the demotivating factors when learning online. Therefore, a more careful selection and preparation of the use of technology is important to address such internet connection problems. One way to overcome the internet connection issue is by selecting LMSs that require low bandwidth to access. Demotivation because of inability to access the LMS should be minimized since it really affects students' perceptions of online learning and ultimately affects the learning process (Mbarek & Zaddem, 2013). In addition, the provision of downloadable materials at the end of the course was also conducted and was seen to be helpful for those with unreliable internet connections. In this way, they could download the materials whenever they had a reliable internet connection and share the materials with others with unreliable internet connections.

6.4 Other research outcomes

During the course of the study a number of unintended research outcomes were revealed. From the analysis of the discussion forum archives, four phenomena were observed. First, the utilization of the mobile messenger for online mobile discussions indicated that students seemed to be more enthusiastically participating in the discussion with shorter messages. In mobile discussions, they replied more immediately to posts than when they replied to posts on the online discussion board within the LMS (DBL). Longer messages tended to be posted by students only when they were required to respond to specific given tasks. However, for other discussions on out-of-task topics, students tended to use shorter messages because it seemed with shorter messages they could immediately respond or share

an idea. Responding with shorter messages, they seemed to be having a more intensive discussion as well. The use of the WhatsApp for mediating online discussion during the study confirms Bere's (2013) finding that mobile messaging fosters the development of learning communities for knowledge creation, for example when students help one another or share knowledge regarding what they were learning.

Second, the teaching presence of the instructor was more frequent than during the online discussion on the DBL, because of the ease of access to the WhatsApp discussion through mobile devices. Instant notification on mobile devices seemed to contribute to the promptness of responses from the teacher and from the students as well. Third, social presence was also high during the mobile discussion though not necessarily higher than in discussions on the DBL. What is interesting is that cognitive presence was also found to be high in mobile SMSs though not as high as in the DBL (see Section 4.5). There seemed to be one striking reason why students were not posting longer messages or more frequently to the mobile discussion, which was the difficulty caused by the inflexibility of typing on a virtual keyboard or small physical keyboard on their mobile devices.

Fourth, 23.7% (128) of posts in the mobile discussion forum included emoticons of various types. Emoticons are a combination of letters, numbers or punctuations that are used to represent facial expression such as smiles or frowns (Wildrick, 2008). The use of emoticons has been found by Derks, Bos, and von Grumbkow (2008) as having an impact on message interpretation as well as helping to strengthen the intensity of verbal messages. Emoticons were used by students in the study in computer based communication for various purposes as has been mentioned in Section 4.5, such as stimulating interactions, emphasizing meanings/emotions, creating more relaxed discussions, showing friendly support/disagreement and striving for online presence.

6.5 Summary

In this chapter links between the findings and the research questions were made. Whenever possible, links to other studies have also been made. The discussion in this chapter was organized in such a way that readers could directly see how the research questions have been answered with the support of data collected throughout the study. The chapter was ended by the presentation of other research outcomes that were also perceived as important to be presented here though they were not specifically intended to be investigated during the study.

Chapter 7: Conclusion

The study took place in an English teacher education department in a teacher training college at one of the prominent Islamic universities in Indonesia. The main aim of the study was to investigate the current practice of CALL teacher training and find ways to improve this practice. In order to do so, a research approach called DBR was employed. Its characteristics include that it is interventionist in a real world setting, which helps in addressing real world educational problems. Following a DBR model proposed by Reeves (2005) the study was conducted in two stages and four different phases. Chapter 3 has detailed the phases. In Chapter 4 a report on each of those stages was presented. In this chapter the research outcomes of the study are highlighted as well as the limitations of the study presented. Also, some suggestions on further possible studies are made.

7.1 Research Outcomes

The study was designed to deliver online training since online training has been the expectation of the institute and the GoI. The effort to improve current practice of CALL teacher training was then directed toward the implementation of online CALL teacher training. The effort of online CALL teacher training development through this DBR study has resulted in at least three outcomes as suggested by Herrington, Reeves, and Oliver (2010): it has generated principles, research artefacts, and professional development and learning experience.

7.1.1 Generated design principles

Six principles were generated based on previous studies. These principles for online training were applied to the development of the OCTT prototypes during the study. Later in

the study two more principles were added after learning from the OCTT implementation experience and students' responses. Thus, in total there were eight online teacher training principles generated during the study. Below is the summary of those principles:

1. Reliable and accessible support

   Students and teachers should be supported when learning and teaching online. By providing adequate support, distraction from the process of learning and teaching will be able to be minimized. Support for teachers can be in the form of technical support by the ICT administrator, and policy and financial support by the college administrator and staff. For students, support can be in the form of technical and pedagogical support.

2. Involving collaboration components

   Collaborative work activities are recommended for online learners. Through collaboration students interact with one another to share, to help, and to solve problems with their peers. Interaction is the essence of online instruction. The more students interact online either through text-based discussion or through audio-video based instruction, the more they are likely to be motivated to actively participate in online learning. Through online collaboration students will not feel that they are studying alone. Also, through collaborative work they will very likely get support from their peers.

3. Continuous, constructive and timely feedback

   During the study, timely feedback was something that was observed as required by students. It should be continuous and accessible by students anytime and anywhere because it is a critical factor contributing to students' success in online learning. Referring to the teacher's feedback, students would know whether they have progressed in a positive direction or not. Feedback should be constructive and timely

to immediately direct the students' learning process in case they have problems while learning.

4. Contextual teaching and learning

   Online training is believed to be more meaningful if it is practical and directly applicable to students' real live experiences. Students should see the connection between what they learn and what they may experience in the real world. Similarly, Knowles with his proposed adult learning theory, assumes that adult learners are relevancy-oriented, meaning that they need to know why they learn specific things. In short, the clearer the connection between what students learn and what they need in the real world, the more likely they will focus on their learning.

5. Timely feedback and support

   Timely feedback and support were observed as factors that could greatly assist students in learning online. Empowering staff and encouraging them to provide timely support to students learning online is necessary.

6. Using reliable technology and assisting the mastery of sufficient technological skills and knowledge

   Preparing the technology for a reliable online course is of ultimate importance. Unreliable technology is very likely to cause frustration among students and thus affect the online learning outcomes. To help students and teachers work effectively with the technology used for online learning, it is necessary to provide training for them prior to the commencement of the online learning process. Through such training, teachers' and students' technology skills and knowledge can at least be assured to assist them in optimizing the use of the technology for either learning or teaching online.

7. Involving experiential learning activities

The result of the study indicated that students worked intensively on the assignment that involved hands-on practice such as producing comics, creating a web-video presentation, organizing ideas in a digital mind map, creating lesson plans and practicing online teaching. This finding confirms Knowles' assumption that adults are practical learners and need to directly experience what they learn through simulation exercises, group discussions, problem solving and case methods.

8. Product-oriented course activities.

Students would feel that they have actually learned and achieved the knowledge and skills from a learning process when they realize that they can create a product after the learning process. The feeling of successful achievement is even escalated when they realize that they can show their products to others and contribute to their field of work. Observation of students' performance during the online study as well as students' testimony shows that they were satisfied with the online course during which the activities were designed to be mostly product oriented.

7.1.2 Research artefacts

Prior to the study, the CALL teacher training course was offered face-to-face. Then during the study a plan to deliver the CALL teacher training course online was offered. This offer was to address the expectations of the institute and the GoI to deliver online courses as well as to find alternatives to the delivery of the existing CALL teacher training course. In the course of the OCTT prototype development a number of events occurred: first, the development of the OCTT syllabus; second, the development of the OCTT materials; third, the LMS set up and the implementation of the OCTT prototype; and fourth, the compilation of materials so that they could be easily downloadable by students for easy learning in case the internet connection was not good. As a result, three artefacts were yielded from the study: the syllabus, the ready-to-deliver online course, and the course materials. These three

artefacts have been the main contribution of the study to the institute and were part of the pioneering of the online course. The study has also facilitated the student-developed ready-to-deliver 15 online lessons (see Appendix I-2 & I-3). Though they might not be perfect online lessons and they might still need some work, at least the student teachers have contributed to their working area with their online lessons.

7.1.3 Professional development and learning experience

There were three professional development and learning experiences facilitated during the study. First was the student teachers' first fully online CALL teacher training experience, which offered students various online learning experiences such as online discussions, mobile discussions, webinars, video conferencing and online collaboration. Second was the academic staff workshop on the use of ICT for education. Third was the collaborative online CALL teacher training development. Working with local teachers collaboratively to develop the course was another collaborative learning experience that was useful for the future professional development process of the researcher and for the participating instructors.

7.2 Limitations of the study and suggestions

During the study factors affecting online teacher training were investigated. The impact of the online training prototype was also investigated. Furthermore, ways of how to improve the existing CALL teacher training course and its delivery was developed. The affecting factors investigated and reported here were mostly country specific. The findings, therefore, might not be relevant in other contexts. Also, categorization of the factors affecting the OCTT may also be too limited for other contexts. However, the factors within the categories are universal and can be used to guide the identification of a similar purpose study investigating the factors affecting online learning in any context.

The impact of the OCTT was investigated but limited only to what students learned and experienced during the study. Their learning achievements were investigated based on their products created as part of their assignment in the online course. No test-based comparison was made during the implementation of the OCTT prototype. This investigation was focused on understanding how much the OCTT prototype was applicable and addressed the GoI and institute expectations towards technology enhanced training and online training for teachers. The implementation of this prototype was more to understand the process of the OCTT delivery rather than the learning outcomes themselves. Therefore, another study, investigating the learning outcomes of the OCTT students using the pre- and post-test method may be worthwhile. Also, during the study, a number of online teaching models were reviewed, but only one model was adapted in the study. Therefore, comparing those models in an experimental setting would probably also be meaningful to inform the strength and weaknesses of each model.

In terms of the online learning activities, during the OCTT prototype development, creating or selecting online learning activities which were varied yet interesting and conformed to the set principles was not easy. The availability of lists of online learning activities previously developed, such as those by Watkins (2005), ION (2010) and CTSI (2015), were thought to be useful for assisting the development of the OCTT prototype. However, with the ever-developing technology offering various possibilities such as web-based video conferencing, cloud-based class management, web-based graphic authoring, and any web 2.0-supported possibilities, the availability of such lists would surely need be consistently revised and updated, otherwise they would be soon out-of-date. Ironically, most students today will not appreciate out-of-date technology. Therefore, it is suggested that other studies investigating and making lists or a taxonomy of various practical online learning

activities should be conducted since they would surely assist online course or training developers.

This study was limited to the delivery of materials on CALL. However, the generated online training principles are presumably applicable to other contexts and subjects. Thus, further investigations to test the principles are worth considering. In addition, the online discussion archive has revealed some information regarding students' types of posts, purpose, and frequency of posts. However, there was no investigation of strategies to draw out more active participation in online or mobile discussions. The only effort to draw active participation during the study was by making certain discussion questions compulsory and assigning some discussions as cyclical. Lastly, what was revealed from the mobile discussion archives was the use of emoticons, which was quite significant in volume especially in the WA group. They were used for various functional reasons as mentioned in section 4.7. However, it is very likely that the use of emoticons may serve other functions and may also create communication problems, as noted by Derks et al. (2008). Therefore, further investigation on the use of emoticons for online or mobile discussion is necessary, especially in researching how much they can motivate or demotivate the online learners to participate in online learning.

7.3 Summary

In harnessing the potential of online learning and online training and addressing the expectations of a local institute and the local GoI for the delivery of a teacher training course online, this study, employing a DBR approach, has tried to find ways of how to improve the existing CALL teacher training through OCTT initiative. This study was then conducted by initially identifying the possible affecting factors to the online training process and other possible on site educational problems. It subsequently proceeded by developing a prototype

of OCTT based on literature-based design principles developed during the early stage of the OCTT prototype development. The prototype of the OCTT was then tested in 2 cycles. At the end of those 2 cycles of testing, eventually the draft of online training principles was finalized, a ready to deliver OCTT course was set, and a very valuable online teacher professional development experience for both students and staff at the research site was initiated and completed.

References

Abuhmaid, A. (2011). ICT Training courses for teacher professional development in Jordan. *Turkish Online Journal of Educational Technology-TOJET, 10*(4), 195-210.

Aliyah, J. A. (2008). *Foreign language teachers' perception of the effectiveness of ICT training.* (master's thesis), The Univeristy of Southern Queensland, Australia.

Amiel, T., & Reeves, T. C. (2008). Design-based research and educational technology: Rethinking technology and the research agenda. *Educational Technology & Society, 11*(4), 29-40.

Anderson, A. (2008). Seven major challenges for e-learning in developing countries: Case study eBIT, Sri Lanka. *International journal of education and development using ICT, 4*(3), 45-62.

Anderson, T. (2004). Teaching in an online learning context. In T. Anderson & E. Fathi (Eds.), *Theory and practice of online learning* (pp. 273-294). Athabasca: Creative Commons.

Anderson, T., & Elloumi, F. (2008). *The theory and practice of online learning*. Athabasca: Athabasca University Press.

Appana, S. (2008). A Review of benefits and limitations of online learning in the context of the student, the instructor and the tenured faculty. *International Journal on E-Learning, 7*(1), 5-22.

Archambault, L. M., & Barnett, J. H. (2010). Revisiting technological pedagogical content knowledge: Exploring the TPACK framework. *Computers & Education, 55*(4), 1656-1662.

Atkins, D. E., Brown, J. S., & Hammond, A. L. (2007). *A review of the open educational resources (OER) movement: Achievements, challenges, and new opportunities*: Creative common.

Bailey, C. J., & Card, K. A. (2009). Effective pedagogical practices for online teaching: Perception of experienced instructors. *The Internet and Higher Education*, 12(3–4), 152-155.

Banegas, D., & Manzur, B. (2014). Motivating factors in online language teacher education in southern Argentina. *Computers & Education, 76*, 131-142.

Beatty, K. (2013). *Teaching and researching: Computer-assisted language learning*. New York: Routledge.

Belawati, T. (2005). The impact of online tutorials on course completion rates and student achievement. *Learning, Media and Technology, 30*(1), 15-25.

Belawati, Tian, & Zuhairi, Amin. (2007). The practice of a quality assurance system in open and distance learning: A case study at Universitas Terbuka Indonesia (The Indonesia Open University). *The International Review of Research in Open and Distance Learning, 8*(1).

Benefits of open educational practices and resources. (2014). *Teaching and Learning.* Retrieved January 27, 2015, from http://www.teaching-learning.utas.edu.au/designing/open-educational-resources/benefits-of-open-educational-practices-and-resources

Bere, A. (2013). Using mobile instant messaging to leverage learner participation and transform pedagogy at a South African University of Technology. *British Journal of Educational Technology*, *44*(4), 544-561.

Bhati, N., Mercer, S., Rankin, K., & Thomas, B. (2010). Barriers and facilitators to the adoption of tools for online pedagogy. *International Journal of Pedagogies and Learning, 5*(3), 5-19.

Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J. J., & Ciganek, A. P. (2012). Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty. *Computers & Education, 58*(2), 843-855

Bolliger, D., & Wasilik, O. (2009). Factors influencing faculty satisfaction with online teaching and learning in higher education. *Distance Education, 30*(1), 103-116.

Brindley, J., Blaschke, L. M., & Walti, C. (2009). Creating effective collaborative learning groups in an online environment. *The International Review of Research in Open and Distributed Learning, 10*(3).

Bryceson, K. (2007). The online learning environment: A new model using social constructivism and the concept of 'Ba' as a theoretical framework. *Learning Environments Research, 10*(3), 189-206. doi: 10.1007/s10984-007-9028-x

Cahyani, H., & Cahyono, B. Y. (2013). Teacher's attitudes and technology use in Indonesian EFl classrooms. *TEFLIN Journal, 23*(2), 130-148.

Cambridge advanced learner's dictionary. (2005). (2nd ed. ed.). Cambridge: Cambridge University Press.

Cartwright, J. (2007). *Teacher training goes online*. Bristol: IOP Publishing Ltd.

Carwile, J. (2007). A Constructivist Approach to Online Teaching and Learning. *Inquiry, 12*(1), 68-73.

Caswell, T., Henson, S., Jensen, M., & Wiley, D. (2008). Open Content and Open Educational Resources: Enabling universal education. *The International Review of Research in Open and Distributed Learning, 9*(1).

Cercone, K. (2008). Characteristics of adult learners with implications for online learning design. *AACE journal, 16*(2), 137-159.

Chai, C. S., Koh, J. H. L., & Tsai, C.-C. (2010). Facilitating Preservice Teachers' Development of Technological, Pedagogical, and Content Knowledge (TPACK). *Educational Technology & Society, 13*(4), 63-73.

Chen, Y., Chen, N., & Tsai, C.-C. (2009). The use of online synchronous discussion for web-based professional development for teachers. *Computers & Education, 53*(4), 1155-1166. doi: http://dx.doi.org/10.1016/j.compedu.2009.05.026

Chien, T.-C. (2008). Factors influencing computer anxiety and its impact on e-learning effectiveness: A review of literature. Retrieved September 24, 2015, from http://files.eric.ed.gov/fulltext/ED501623.pdf

Clark-Ibáñez, M., & Scott, L. (2008). Learning to teach online. *Teaching Sociology, 36*(1), 34-41. doi: 10.2307/20058625

Collins COBUILD Advanced learner's English dictionary. (2006). (3rd ed. ed.). Glasgow: HarperCollins.

Compton, L. K. (2009). Preparing language teachers to teach language online: A look at skills, roles, and responsibilities. *Computer Assisted Language Learning, 22*(1), 73-99.

Constructivism. (2014). Retrieved January 3, 2014, from http://sydney.edu.au/education_social_work/learning_teaching/ict/theory/constructivism.shtml

Cox, S., & Graham, C. (2009). An elaborated model of the TPACK framework. Paper presented at the *Society for Information Technology & Teacher Education International Conference*.

Creative Commons Australia. (2010). Retrieved January 29, 2015, from http://creativecommons.org.au/learn/licences/

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. California: SAGE Publications, Inc.

Creswell, J. W. (2012). *Qualitative inquiry and research design: Choosing among five approaches*. London: Sage publications.
CTSI. (2015). Possible online teaching strategies. Retrieved from http://www.teaching.utoronto.ca/topics/strategies/continuity-planning/online-strategies.htm
Curwood, J. S. (2011). Teachers as learners: What makes technology-focused professional development effective? *English in Australia, 46*(3), 68.
Darmayanti, T, Dewiki, S, Asih, I. W, & Nurhayati, R. (2004). Participation of Indonesian students in the asynchronous online course. Paper presented at the *SEAMOLEC-UT*, Jakarta, Indonesia.
Debski, R. (2006). Theory and practice in teaching project-oriented CALL. In P. Hubbard & M. Levy (Eds.), *Teacher education in CALL* (pp. 99-114). Philadelphia: John Benjamins Publishing Company.
Delfino, M., & Persico, D. (2007). Online or face-to-face? Experimenting with different techniques in teacher training. *Journal of Computer Assisted Learning, 23*(5), 351-365.
Derks, D., Bos, A. E. R., & von Grumbkow, J. (2008). Emoticons and online message interpretation. *Social Science Computer Review*, *26*(3), 379-388. doi: 10.1177/0894439307311611
Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher, 32*(5), 5-8. doi: 10.3102/0013189X032001005
Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher, 32*(5), 5-8. doi: 10.3102/0013189X032001005
Docebo. (2014). E-learning market trends and forecast 2014-2016. Retrieved from https://www.docebo.com/landing/contactform/elearning-market-trends-and-forecast-2014-2016-docebo-report.pdf
Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford: Oxford University Press.
Education Development Center. (2009). *Upgrading Indonesian primary school teachers through distance education: Towards systemic improvement*. Jakarta: USAID Retrieved from http://indonesia.usaid.gov/documents/document/Document/570/DBE2Final_Distance_Education_Study_29_6_09.
Elias, T. (2011). Universal instructional design principles for mobile learning. *The International Review of Research in Open and Distributed Learning*, *12*(2).
Eris. (2011). Pelatihan TIK bagi guru. Retrieved from http://disdik.balikpapan.go.id/index.php/berita/173-pelatihan-tik-bagi-guru-
Ernst, J. (2008). A comparison of traditional and hybrid online instructional presentation in communication technology. *Journal of Technology Education, 19*(2).
Eskenazi, M., & Brown, J. (2006). Teaching the creation of software that uses speech recognition. In P. Hubbard & M. Levy (Eds.), *Teacher education in CALL* (pp. 135-151). Philadelphia: John Benjamins Publishing.
Fathoni, Naimah. (2009). Meknisme diklat jarak jauh [Distance training mechanism]. *Medik, 1*(1), 21-22.
Feldman, R., Zucker, D., Carver, K., Cohen, N., Hanno, D., Jessoe, J., & Tello, S. (n.d.). *Teaching and learning online*. Amherst, MA: Univeristy of Massachusetts Amherst.

Fidishun, D. (2000, April). Andragogy and technology: Integrating adult learning theory as we teach with technology. Paper presented at the Proceedings of the *2000 Mid-South Instructional Technology Conference*, Murfreesboro, Tennessee.

Folinsbee, S. (2008). Online learning for adults: Factors that contribute to success. Retrieved from http://www.collegeupgradingon.ca/ace/litreview/litreview.pdf

Friesen, N. (2013). Realising the open in open educational resources: Practical concerns and solutions. In R. McGreal, W. Kinuthia, & S. Marshall (Eds.), *Open educational resources: Innovation, research and practice* (pp. 79-90). Vancouver: Commonwealth of Learning.

Fuglerud, K. S., & Vavik, T. (2009). Universal design in ICT services. *Inclusive buildings, products & services: Challenges in Universal Design*, 244-267.

Gaible, E., & Burns, M. (2005). Using technology to train teachers: Appropriate uses of ICT for teacher professional development in developing countries. Retrieved from http://www.infodev.org/en/Publication.13.html

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2), 87-105.

Gaytan, J., & McEwen, B. C. (2007). Effective Online Instructional and Assessment Strategies. *American Journal of Distance Education*, *21*(3), 117-132. doi: 10.1080/08923640701341653

Geser, G., & Hornung-Prahauser, V. (2010). *ICT use in intial teacher training*. Salzburg, Austria: Salzburg Research Forschungsgesellschaft m.b.H.

Gigante, J., Dell, M., & Sharkey, A. (2011). Getting beyond "good job": how to give effective feedback. *Paediatrics*, *127*(2), 205-207.

Graham, C. R. (2011). Theoretical considerations for understanding technological pedagogical content knowledge (TPACK). *Computers & Education, 57*(3), 1953-1960.

Gray, D. (2013). *Doing research in the real world*. London, UK: Sage.

Gunn, C. (2010). Effective online teaching: How far do the frameworks go. Paper presented at the *The 18th Annual Confrence of the Australian Society for Computers in Learning in Tertiary Education*, Melbourne.

Gunn, C. (2011). Sustainability factors for e-learning initiatives. *Research in Learning Technology*, *18*(2). doi: 10.3402/rlt.v18i2.10755

Hanson-Smith, E. (2006). Communities of practice for pre-and in-service teacher education. In P. Hubbard & M. Levy (Eds.), *Teacher education in CALL* (pp. 301-315). Philadelphia: John Benjamins Publishing.

Harmer, J. (2007). *The practice of English language teaching: with DVD*. Essex, UK: Pearson Education Limited.

Harris, J., & Hofer, M. (2009). Instructional planning activity types as vehicles for curriculum-based TPACK development. Paper presented at the *Society for Information Technology & Teacher Education International Conference*.

Hasyim. (2012). 512 guru ikut pelatihan TIK. Retrieved from http://aceh.tribunnews.com/2012/06/09/512-guru-ikut-pelatihan-tik

Healey, D., Hegelheimer, V., Hubbard, P., Ioannou, S., Kessler, G., & Ware, P. (2008). *TESOL technology standards framework*. Alexandria, VA: TESOL, Inc.

Hegelheimer, V. (2006). When the technology course is required. In P. Hubbard & M. Levy (Eds.), *Teacher education in CALL* (pp. 117-133). Philadelphia: John Benjamins Publishing.

Herrington, J, McKenney, S, Reeves, T, & Oliver, R. (2007). Design-based research and doctoral students: Guidelines for preparing a dissertation proposal. Paper presented at

the *World Conference on Educational Multimeda, Hypermedia and Telecommunication*, Chesapeake, VA.
Herrington, J. (2006). Authentic e-learning in higher education: Design principles for authentic learning environments and tasks. Paper presented at the *World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*, Chesapeake, VA.
Herrington, J., Reeves, T. C., & Oliver, R. (2010). *A guide to authentic e-learning*. London: Routledge.
Hismanoglu, M. (2012). Prospective EFL teachers' perceptions of ICT integration: A study of distance higher education in Turkey. *Educational Technology and Society, 15*(1), 185-196.
Hodgkinson-Williams, C. (2010). Benefits and challenges of OER for higher education institutions. Paper presented at the *OER Workshop for Heads of Commonwealth Universities*, Cape Town, Africa. Retrieved from http://www.col.org/SiteCollectionDocuments/OER_BenefitsChallenges_presentation.pdf.
Hoffman, J. (2004). *Live and online* Retrieved from Books24x7 database
Hooker, M. (2008). Models and best practices in teacher professional development. Retrieved from http://www.gesci.org/old/files/docman/teacher_professional_development_models.pdf
Hoven, D. L. (2007). The affordances of technology for student teachers to shape their teacher education experience. In M. A. Kassen, R. Z. Lavine, K. Murphy-Judy, & M. Peter (Eds.), *Preparing and Developing Technology-proficient L2 Teachers.* Texas:. CALICO.
Hramiak, A. (2010). Online learning community development with teachers as a means of enhancing initial teacher training. *Technology, Pedagogy & Education, 19*(1), 47-62.
Hubbard, P. (2008). CALL and the future of language teacher education. *CALICO journal*, *25*(2), 175-188.
Hubbard, P. (2009). Educating the CALL specialist. *International Journal of Innovation in Language Learning and Teaching, 3*(1), 3-15.
Hubbard, P., & Kessler, G. (2008, August). Help shape TESOL's new technology standards. Paper presented at the *WorldCALL*, Fukuoka, Japan.
Hubbard, P., & Levy, M. (2006). *Teacher education in CALL* (Vol. 14). John Benjamins Publishing.
Hudson, C. C., & Whisler, V. R. (2008). Contextual teaching and learning for practitioners *Journal of Systemics, Cybernetics, and Informatics, 6*(6), 54-58.
ION. (2010). Online teaching activity index. Retrieved from http://www.ion.uillinois.edu/resources/otai/
ISTE. (2008). ISTE national educational technology standadrs (NETS) and performance indicators for teachers. Retrieved from http://www.iste.org/docs/pdfs/nets_for_teachers_2000.pdf?sfvrsn=2
ITEA. (2003). *Advancing excellence in technological literacy*. Reston, VA: ITEA.
Jepson, Paul. (2013). *Birding Indonesia: A Birdwatcher's Guide to the World's Largest Archipelago*. Singapore: Tuttle Publishing.
Johnson, E. B. (2002). *Contextual teaching and learning : what it is and why it's here to stay*. Thousand Oaks, CF: Corwin Press.
Jung, I. (2005a). Cost-effectiveness of online teacher training. *Open Learning: The Journal of Open, Distance and e-Learning, 20*(2), 131-146.
Jung, I. (2005b). ICT-Pedagogy Integration in Teacher Training: Application Cases Worldwide. *Educational Technology & Society, 8*(2), 94-101.

Kansil, C. (2003). *Pancasila dan undang-undang dasar 1945* (Vol. 1). Jakarta: Pradnya Paramita.
Kaufman, D. (2004). Constructivist issues in language learning and teaching. *Annual Review of Applied Linguistics*, *24*, 303-319. doi: doi:10.1017/S0267190504000121
Keengwe, J., & Kidd, T. T. (2010). Towards best practices in online learning and teaching in higher education. *Journal of Online Learning and Teaching*, *6*(2), 533-541.
Keengwe, J., & Kidd, T. T. (2010). Towards best practices in online learning and teaching in higher education. *Journal of Online Learning and Teaching, 6*(2), 533-541.
Keller, C., Hrastinski, S., & Carlsson, S. A. (2007). Students' acceptance of e-learning environments: A comparative study in Sweden and Lithuania. Paper presented at the Proceedings of the *Fifteen European Conference on Information Systems*.
Kemendiknas. (2007a). *Permendiknas no. 18 tahun 2007* Jakarta: Kemendiknas Retrieved from http://luk.staff.ugm.ac.id/atur/Permen18-2007SertifikasiGuru.pdf.
Kemendiknas. (2007b). *Permendiknas no. 8 tahun 2007 tenatng organisasi dan tata kerja P4TK*. Jakarta: Kemendiknas.
Kemenag. (2013). Balai diklat keagamaan. Retrieved June 25, 2014, from http://kemenag.go.id/file/dokumen/AlamatBalitbang.pdfhttp://kemenag.go.id/file/dokumen/AlamatBalitbang.pdf
Kemendiknas. (2007). *Standar kualifikasi akademik dan kompetensi guru [Standards of academic qualification and competence of teachers]*. Jakarta: KEMENDIKNAS.
Kemendiknas. (2011). Panduan penyelenggaraan model pembelajaran pendidikan jarak jauh di perguruan tinggi [Guidelines for the implementation of distance education in higher education institutes]. Jakarta: Dirjen DIKTI.
Kessler, G. (2006). Assessing CALL teacher training: What are we doing and what could we do better. *Teacher education in CALL*, 23-42.
Klieme, E., & Vieluf, S. (2009). Teaching practices, teachers' beliefs and attitudes Creating Effektive Teaching and Learning Environments. First Results from TALIS (pp. 87-135): OECD.
Knowles, M., Holton, E., & Swanson, R. (2005). *The adult learner* (Sixth Edition). Burlington, MA: Elsevier, Inc.
Ko, S., & Rossen, S. (2010). *Teaching online: a practical guide* (3rd ed.). New York: Taylor and Francis.
Koehler, M., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? *Contemporary Issues in Technology and Teacher Education, 9*(1), 60-70.
Koh, J. H., & Divaharan, S. (2011). Developing pre-service teachers' technology integration expertise through the TPACK-developing instructional model. *Journal of Educational Computing Research, 44*(1), 35-58.
Koontz, F. R., Li, H., & Compora, D. P. (2006). *Designing effective online instruction*. Lanham, MD: Rowman and Littlefield.
Lan, Y., Chang, K., & Chen, N. (2012). CoCAR: An online synchronous training model for empowering ICT capacity of teachers of Chinese as a foreign language. *Australasian Journal of Educational Technology*, *28*(6), 1020-1038.
Lieb, S. (1991). *Principles of adult learning*. Phoenix, AZ: Vision-South Mountain Community College.
Mallon, M. (2013). MOOCs. *Public Services Quarterly, 9*(1), 46-53. doi: 10.1080/15228959.2013.758982
Manno, A., & Shahrabi, K. (2010, June). Web 2.0: How It Is changing how society communicates. Paper presented at the *Annual National Conference*, Louisville, KY.

Maor, D. (2013, December). Does the use of the TPACK model enhance digital pedagogies: We don't understand the present so how can we imagine the future? Paper presented at the *30th ASCILITE Conference*, Sydney.

Mario. (2012). *Pelatihan TIK bagi guru dan masyarakat di Bekasi*. Retrieved June 21, 2013, from http://www.relawan-tik.org/2012/07/10/pelatihan-tik-bagi-guru-dan-masyarakat-di-bekas/

Marshall, G. (2005). The purpose, design and administration of a questionnaire for data collection. *Radiography, 11*(2), 131-136. doi: http://dx.doi.org/10.1016/j.radi.2004.09.002

Mbarek, R., & Zaddem, F. (2013). The examination of factors affecting e-learning effectiveness. *International Journal of Innovation and Applied Studies, 2*(4), 423-435.

McGill, L. (2013). What are open educational resources. Retrieved December 21, 2014, from https://openeducationalresources.pbworks.com/w/page/24836860/What%20are%20Open%20Educational%20Resources

McGrath, J., Karabas, G., & Willis, J. (2011). From TPACK concept to TPACK practice: An analysis of the suitability and usefulness of the concept as a guide in the real world of teacher development. *International Journal of Technology in Teaching and Learning, 7*(1), 1-23.

McGreal, R., & Elliott, M. (2008). Technologies of online learning (e-learning). In T. Anderson (Ed.), *Theory and practice of online learning* (pp. 143-166). Athabasca: AU Press.

McKenney, S., Nieveen, N., & van den Akker, J. (2006). Design research from a curriculum perspective. In J. Van den Akker, K. Gravemeijer, S. McKenney & N. Nieveen (Eds.), *Educational design research* (pp. 67-90). New York: Routledge.

McLeod, S. (2009). Jean Piaget. Retrieved January 2, 2014, from http://www.simplypsychology.org/piaget.html

McMillan, C. (2010). Do teachers teach as they are taught to teach. Retrieved November 21, 2013, from http://americanreadingforum.org/yearbook/yearbooks/85_yearbook/pdf/27_McMillan.pdf

McNeil, L. (2013). Exploring the relationship between situated activity and CALL learning in teacher education. *ReCALL, 25*(2), 215-232.

Mendikbud. (2012). *Permendikbud no. 24 tahun 2012: Penyelenggaraan pendidikan jarak jauh pada pendidikan tinggi*. Jakarta: Kementerian Pendidikan dan Kebudayaan.

Miao, F. (2011). Institutional strategy for teacher training on ICT-pedagogy Integration. Retrieved January 14, 2013, from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/wsis/UNESCO%20ICT-CFT_FC%20Miao_UNESCO_15May2011.pdf

Midoro, V. (2013). *Guidelines on adaptation of the UNESCO ICT competency framework for teachers*. Moscow: UNESCO Institute for ITE.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. California: Sage.

Mishra, P., & Koehler, M. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *The Teachers College Record*, *108*(6), 1017-1054.

Misra, P. K. (2014). Online training of teachers using OER: Promises and potential strategies. *Open Praxis, 6*(4), 375–385.

Moisey, S. D., & Hughes, J. A. (2008). Supporting the online learner. *Theory and practice of online learning,*, 419-439.

Motteram, G. (2014). Re-aligning research into teacher education for CALL and bringing it into the mainstream. *Language Teaching, 47*(3), 319-331. doi: 10.1017/S0261444811000632
Muilenberg, L., & Berge, Z. (2005). Student barriers to online learning: A factor analytic study. *Distance Education, 26*(1), 29-48.
Mulyani, E. (2013). Model pembelajaran berbasis proyek. Retrieved from http://staff.uny.ac.id/sites/default/files/pendidikan/Dr.%20Endang%20Mulyani,%20M.Si./KAKUBUTEK%20-%20Project%20Based%20Learning.pdf
Nunan, D. (2012). Foreword. In L. England (Ed.), *Online language teacher education: TESOL perspectives*. New York: Routledge.
OECD. (2007). *Giving knowledge for free: The emergence of open educational resources*. Paris: OECD Publishing.
OECD. (2009). Creating effective teaching and learning environments: First result from TALIS (pp. 49). Paris, France: OECD.
OED. (2013). Oxford dictionary of English online Retrieved July 31, 2014, from http://www.oxforddictionaries.com/definition/english/pre-service?q=preservice
Orleans, A. V. (2010). Enhancing teacher competence through online training. *The Asia-Pacific Education Researcher, 19*(3).
P21. (2011). P21 Framework definitions. Retrieved from http://www.p21.org/storage/documents/P21_Framework_Definitions.pdf
Panigrahi, M. R. (2014). OER movement: Quality concern and challenges. Retrieved January 29, 2015, from www.oecd.org/edu/ceri/37351085.pdf
Pannen, P., Riyanti, R., & Pramuki, E. (2007, December). HYLITE program: An ICT-based ODL for Indonesian teacher education. Paper presented at the *The 11th UNESCO APEID conference on revitalizing higher education*, Bangkok.
Park, J. H., & Choi, H. J. (2009). Factors influencing adult learners' decision to drop out or persist in online learning. E*ducational Technology & Society*, *12*(4), 207-217.
Partridge, J. (2006). Matching Language and IT skills: the life-cycle of an MA Programme. In P. Hubbard & M. Levy (Eds.), *Teacher education and CALL* (pp. 63-79). Philadelphia: John Benjamins Publishing.
Pelz, B. (2010). (My) Three Principles of Effective Online Pedagogy. *Journal of Asynchronous Learning Networks, 14*(1), 103-116.
Peters, M. (2006). Developing computer competencies for pre-service language teachers. In P. Hubbard & M. Levy (Eds.), *Teacher education in CALL* (pp. 153-165). Philadelphia: John Benjamins Publishing.
Piaget, J. (1953). *The origins of intelligence in children*. New York: International Univeristies Press, Inc.
Pollice, G. (2003). teaching versus training. *Developer works* Retrieved January 14, 2015, from http://www.ibm.com/developerworks/rational/library/3810.html
Potashnik, Michael, & Capper, Joanne. (1998). Distance education: Growth and diversity. *Finance and development, 35*, 42-45.
Powell, K., & Kalina, C. (2009). Cognitive and social constructivism: Developing tools for an effective classroom. *Education*, *130*(2), 241-250.
Profiles of Indonesia. (2009). Retrieved June 25, 2014, from http://www.indonesianembassy.org.uk/aboutIndonesia/indonesia.html
Purwanto, Bodrogini, P. W., Sumarwanto, D., Chaeruman, U., & Butcher, N. (2012). Kerangka kerja kompetensi TIK untuk guru: Naskah akademik [Draft]. Retrieved June 9, 2013, from https://engage.intel.com/docs/DOC-30990

Redmond, P. (2011). *Exploring teaching and cognitive presence in blended learning: Promoting pre-service teachers' critical thinking*. PhD Dissertation. University of Southern Queensland. Toowoomba.

Reeves, T. C. (2000). Enhancing the worth of instructional technology research through "design experiments" and other development research strategies. Paper presented at the *International Perspectives on Instructional Technology Research for the 21st Century*, New Orleans. Retrieved from: http://www.teknologipendidikan.net/wp-content/uploads/2009/07/Enhancing-the-Worth-of-Instructional-Technology-Research-through3.pdf.

Reeves, T. C. (2006). Design research from a technology perspective. In J. Van den Akker, K. Gravemeijer, S. McKenney, & N. Nieveen (Eds.), *Educational design research* (pp. 52-66). New York: Routledge.

Rencana strategis kementerian pendidikan dan kebudayaan tahun 2010-2014. (2012). Retrieved June 25, 2014, from http://www.kemdikbud.go.id/kemdikbud/tentang-kemdikbud-renstra

Rienties, B., Lygo-Baker, S., Brouwer, N., & Townsend, D. (2011, November). Changing teacher beliefs through ICT: Comparing a blended and online teacher training program. Paper presented at the *10th European Conference on E-Learning (ECEL)*, Brighton, UK.

Robb, T. N. (2006). Helping teachers to help themselves. In P. Hubbard & M. Levy (Eds.), *Teacher education in CALL* (pp. 335-347). Philadelphia: John Benjamins Publishing.

Robinson, B. (2008). Using distance education and ICT to improve access, equity and the quality in rural teachers' professional development in western China. *International Review of Research in Open & Distance Learning, 9*(1), 1-17.

Rosyidi, U, Mahsunah, D, Antono, A, Wahyuni, D, Ambarrukmi, S, Wismana, M. A., & Gultom, R. (2013). *Sertifikasi guru dalam jabatan tahun 20013: Buku 1 pedoman penetapan peserta*. Jakarta: Kemendikbud.

Rourke, A. J., & Coleman, K. S. (2011, December). Authentic assessment in elearning: Reflective and collaborative writing in the arts. Paper presented at the *ASCILITE-Australian Society for Computers in Learning in Tertiary Education Annual Conference*, Hobart.

Sales, G., Al-Barwani, T., & Miske, S. (2008). Prospects and challenges of an online teacher training project in Oman. *International Journal of Education and Development using Information and Communication Technology, 4*(1), 120-130.

Salmon, G. (2013). *E-Tivities* (2nd Edition). Florence, KY, USA: Routledge.

Sanou, B. (2014). *ICT facts and figures 2014*. Geneva: International Telecommunication Union.

Sari, Eunice R. (2012). *Teacher professional development in an online learning community: A case study in Indonesia.* (doctoral dissertation), Edith Cowan University, Australia.

Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological Pedagogical Content Knowledge (TPACK) The Development and Validation of an Assessment Instrument for Preservice Teachers. *Journal of Research on Technology in Education, 42*(2), 123-149.

Setiabudi, P. (2011). Pelatihan TIK bagi guru PAUD. Retrieved June 21, 2013, from http://www.waspada.co.id/index.php?option=com_content&view=article&id=225458:pelatihan-tik-bagi-guru-paud&catid=14:medan&Itemid=27

Shamsid-Deen, I., & Smith, B. P. (2006). Contextual teaching and learning practices in the family and consumer sciences curriculum. *Journal of Family and Consumer Sciences Education, 24*(1), 14-26.

Shaw, J. (2010). What's the difference between training and teaching? *Training and development.* Retrieved January 15, 2015, from http://managementhelp.org/blogs/training-and-development/2010/12/02/what%E2%80%99s-the-difference-between-training-and-teaching/

Shi, X., & Englert, P. (2008). Reform of teacher education in China. *Journal of Education for Teaching, 34*(4), 347-359.

Shin, M., & Lee, Y.-J. (2009). Changing the landscape of teacher education via online teaching and learning. *Techniques: Connecting Education and Careers, 84*(1), 32-33.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 4-14.

Slaouti, D., & Motteram, G. (2006). Reconstructing practice: Language teacher education and ICT. In P. Hubbard & M. Levy (Eds.), *Teacher education in CALL* (pp. 81-97). Philadelphia: John Benjamins Publishing Company.

Soekartawi, S, Haryono, A, & Librero, F. (2012). Great Learning Opportunities Through Distance Education: Experiences in Indonesia and the Philippines. *Southeast Asian Journal of Education, 3*(2).

Son, J.-B. (2002). Computers, learners, and teachers: Teamwork in the CALL classroom. *English Language Teaching, 14*(2), 239-252.

Son, J.-B. (2004). Teacher development in e-learning environments. In J.-B. Son (Ed.), *Computer-assisted language learning: Concepts, contexts, and practices* (Vol. 1, pp. 107-122). Lincoln, NE: iUniverse.

Son, J.-B. (2006). Using online discussion groups in a CALL teacher training course. *RELC Journal*, *37*(1), 123-135.

Son, J.-B. (2009). Using web-based portfolios in CALL teacher education. In J.-B. Son (Ed.), *Internet-based language learning: Pedagogies and technologies* (pp. 107-118). Raleigh, NC: Lulu.

Son, J.-B. (2011). Online tools for language teaching. *TESL-EJ, 15*(1), 1-12.

Son, J.-B. (2014). Moving beyond basics: from CALL coursework to classroom practice and professional development. In J.-B. Son (Ed.), *Computer-assited language learning: Learners, teachers and tools*. Newcastle, UK: Cambridge Scholar Publishing.

Son, J.-B., Robb, T, & Charismiadji, I. (2011). Computer literacy and competency: A survey of Indonesian teachers of English as a foreign language. *CALL-EJ, 12*(1), 26-42.

Stockwell, G. (2009). Teacher education in CALL: teaching teachers to educate themselves. *International Journal of Innovation in Language Learning and Teaching, 3*(1), 99-112.

Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education, 50*(4), 1183-1202.

Temple, B., Edwards, R., & Alexander, C. (2006). Grasping at context: Cross language qualitative research as secondary qualitative data analysis. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research, 7*(4). Available at: http://www.qualitative-research.net/index.php/fqs/article/viewArticle/176/393

Thakrar, J., Wolfenden, F., & Zinn, D. (2009). Harnessing Open Educational Resources to the Challenges of Teacher Education in Sub-Saharan Africa. *The International Review of Research in Open and Distributed Learning, 10*(4).

The free Merriem-Webster dictionary. (2014). Retrieved November 17, 2014, from http://www.merriam-webster.com/dictionary/teach

The Oxford English dictionary. (2004). Oxford: Clarendon Press.

Tochon, F. V., & Black, N. J. (2007). Narrative analysis of electronic portfolios: pre-service teachers' struggles in researching pedagogically appropriate technology integration. CALICO Monograph Series *Preparing and developing technology-proficient L2 teachers*, *6*, 295-320.

Trochim, W. M., & Donnelly, J. P. (2008). *Research methods knowledge base*. Mason, Ohio: Atomic Dog/Cengage Learning.

Udawewed. (2012). 40 orang guru antusias mengikuti pe;atihan TIK. Retrieved March 15, 2013, from http://disdik-agam.org/component/content/article/41-pim/652-40-orang-guru-antusias-mengikuti-pelatihan-tik

Undang-undang republik indonesia nomor 14 tahun 2005 tentang guru dan dosen [Indonesian teacher and lecturer law] (2005).

Undang-undang Republik Indonesia nomor 20 tahun 2003. (2003). Jakarta: Depdiknas.

UNESCO. (2003). *Teacher training on ICT use in education in Asia and the Pacific: Overview from selected countries*. Bangkok, Thailand: UNESCO Asia and Pacific Regional Bureau for Education.

UNESCO. (2008). *ICT Competency standards for teachers*. United Kingdom: UNESCO.

UNESCO. (2015). UNESCO ICT Competency framework for teachers. Retrieved from http://www.unesco.org/new/en/unesco/themes/icts/teacher-education/unesco-ict-competency-framework-for-teachers/

Uushimaki, M. (2009). *Pre-service teacher education and the development of middle school teacher identity.* (Unpublished Ph.D thesis), Queensland University of Technology, Brisbane.

van den Akker, J. (1999). Principles and methods of development research. In J. van den Akker, R. M. Branch, K. Gustafson, N. Nieveen, & T. Plomp (Eds.), *Design apporaches and tools in education and training* (pp.1-14). Dordrecht Springer.

van den Akker, J., Gravemeijer, K., McKenney, S., & Nieveen, N. (2006). Introducing educational design research. *Educational design research*, 3-7.

Voogt, J., Fisser, P., Pareja Roblin, N., Tondeur, J., & van Braak, J. (2013). Technological pedagogical content knowledge: A review of the literature. *Journal of Computer Assisted Learning, 29*(2), 109-121.

Wai-Kong, Ng., Anderson, J., Barnhart, S., Majumdar, S., Koszalka, T.A, & Zhi-ting, Z. (2005). *Regional guidelines on teacher development for pedagogy-technology integration*. Bangkok, Thailand: UNESCO Asia and Pacific Regional Bureau for Education.

Wang, F., & Hannafin, M. J. (2005). Design-based research and technology-enhanced learning environments. *Educational Technology Research and Development, 53*(4), 5-23. doi: Doi 10.1007/Bf02504682

Watkins, R. (2005). Developing interactive e-learning activities. *Performance Improvement*, *44*(5), 5-7.

Watson, K. (2014). Why is online teaching important? Retrieved November 7, 2014, from http://online.cofa.unsw.edu.au/sites/default/files/episode-pdf/Importance_LTTOn.pdf

Webometrics. (2014). Ranking web of universities. Retrieved July 2, 2014, from http://www.webometrics.info/en/Asia/Indonesia%20

Wheeler, S. (2010). *What's so good about open educational resources.* Paper presented at the UNESCO's OER Conference, Windhoek, Namibia. Retrieved from http://www.col.org/SiteCollectionDocuments/OER_WhatIsGood_Wheeler.pdf.

White, D., Manton, M., & Warren, N. (2011). *Open educational resources (OER): The value of reuse in higher education*. Oxford: Creative Commons.

Widiani, M., Baedhoni, Hartoyo, Sun, N., Sion, H., Ladi, S., Mustafa, Z. (2010). *Teaching competency standadrs in south east asian countries*. Phillippines: SEAMEO Innotech.

Widoyoko, E. (2008). Peranan sertifikasi guru dalam meningkatkan mutu pendidikan. Paper presented at the Seminar Nasional Peningkatan Mutu Pendidikan, Purworejo, Indonesia. Retrieved from http://www.umpwr.ac.id/download/publikasi-ilmiah/Peranan%20Sertifikasi%20Guru%20dalam%20Meningkatkan%20Mutu%20Pendidikan.pdf

Wijakkanalan, S., Wijakkanalan, W., & Suwannoi, P. (2013). Teacher and educational personel development through e-Training. *International Journal of e-Education,e-Business,e-Management, adn e-Learning, 3*(1), 47-50.

Wildrick, A. (2008). Emoti-whats? Emoticons. *Appleseeds*, *10*(8), 26.

World bank and environment in Indonesia. (2013). Retrieved June 26, 2014, from http://go.worldbank.org/QQE3DLKB20

Wright, K. B. (2005). Researching Internet-based populations: Advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services. *Journal of Computer-Mediated Communication*, *10*(3), 00-00.

Yan, H. (2009). Teacher training in China and a practical model: e-Training Community (eTC). *Campus-Wide Information Systems, 26*(2), 114-121. doi: doi:10.1108/10650740910946837

Yucel, S. A. (2006). E-Learning approach in teacher training. *Online Submission, 7*(4).

Zuhairi, A, Wahyono, E, & Suratinah, S. (2006). The historical context, current development, and future challenges of distance education in Indonesia. *Quarterly Review of Distance Education, 7*(1), 95-101.

Appendices

Appendix A: Semi-Structured Interview Questions

1. Questions for semi-structured Interviews with instructors

The semi structured interview with instructors attempts to seek information regarding Instructors' believe beliefs in the online teacher training (OTT) as a medium for delivering teacher training, their experience in attending an OTT and delivering the OTT, OTT activities and management.

	Main Questions	Following Topics
Perception and Belief	What do you think about this OTT?	
	Are you comfortable to conduct online training?	
	Are there any difficulties? What kind of difficulties have you faced so far?	
Previous training	Have you ever experienced online training before?	
	Has prior training been offered before you conducted this particular training?	
	How would you rate your ICT literacy?	
	Do you have an email account?	
	Do you check your email regularly?	
Training Activities	What do you do to facilitate interaction?	
	What do you do to motivate trainees to interact?	
	Are you adapting any online training models?	
	Are you satisfied with what you have been doing so far to facilitate interaction?	
	How do you usually find ideas for OTT activities or materials	
	Do you have access to journals or books on TT or online learning?	
Training Materials	Do you choose your own training materials?	
	How do you decide which materials to use?	
	Have you ever done a needs analysis before the training to help you decide which materials to use?	
	What elements do you consider when choosing the materials?	
Knowledge on Students ICT skills	Do you know the level of your students' ICT skills mastery?	
	Have you ever done prior study on it? If so, why?	
	Are you comfortable with your own ICT	

	knowledge?	

2. Questions for semi-structured Interviews with Administrators

The interview with administrators is designed to explore their beliefs about the use of OTT, the kinds of support they can provide for OTT, and to provide an ICT competence overview among staff and faculties.

	Main Questions	Following Topics
Belief, motivation and perception	What do you think about OTT?	
	What do you think about the prospect of OTT	
	What might be the potential problems of OTT in the institution?	
	What is your effort in applying ICT/Online teaching in your class?	
Support	What kind of support will you, or do you provide for OTT?	
	What plan will you make for the faculties' IT competence development?	
	Do you or will you make rules, regulations, or policy regarding OTT?	
ICT competence	How would you rate your staff's ICT competence based on you observation?	
	Do you have an email account?	
	Do you check your email account regularly?	
	Do you have a social network account?	
	Do you check it regularly?	

3. Questions for semi-structured Interviews with ICT Administrators

The interviews with ICT administrators are to explore their beliefs about the use of OTT, the kinds of support they can provide for OTT, and their technical ideas of developing ICT for education.

Main Questions	Following Topics
What do you think about OTT in this institution?	
How would you describe the ICT literacy of the staff and faculties in the institution?	
How would you describe the ICT facilities in the institution?	
What is your opinion about the provision of ICT support for trainees, staff and faculties in this institution?	
Do you have any idea or plan for the development of ICT facilities in the institution?	
What might be the potential obstacles to making the idea become reality?	

Appendix B: Questionnaire

(Set up and delivered through http://www.surveymonkey.com)

QUESTIONNAIRE
(Adapted from Son, 2011)

Thank you for your taking the time to complete this survey. Your feedback is very important for our study to improve the quality of online CALL teacher training in this teacher training department. Therefore, your honest and sincere feedback is highly expected. To complete the survey, should only take about 10-15 minutes of your time. Please also be informed that your participation in this questionnaire is voluntary and will have no effect on your academic performance report. Also, your responses will be completely anonymous. You may refuse to do this survey, or stop responding to it at any time you want by just closing your browser. By clicking the submit button at the end of the survey, you agree that you provide your consent to the provision of this data collection.

If you have any questions or concerns, please do not hesitate to contact me via email: *msyaifudin@gmail.com* or Skype: *udinxsan*

SECTION I

For each question, please mark your response with a tick (√), unless otherwise indicated. For 'Other' responses, provide a brief response.

1. Gender :
2. Age :
3. What is your job & position :
4. Where do you currently work

Kindergarten		Primary School	
Secondary school		Technical college	
University		Private language school	
Private tutor		Others (please specify)	
Not now			

Name of city /town:…….

5. How long have you been working as an EFL teacher?
   ☐ Please tick if you have never taught

6. How long have you been using computers? ……. Years (s)…….Month(s)
   ☐ Please tick here if you have never used a computer. Then, go directly to Section V.

7. What type of computers have you used?

Type of computer	Length of time	Purposes
E.g. PC (windows XP)	1 year	Word processing, gaming, video watching
E.g. Android		Browsing the Internet, chatting

8. Do you currently have regular access to a computer?
   Yes ☐
   No ☐ (Skip Q.9)

9. Does the computer have an internet connection? Yes ☐ No ☐
10. Do you have a mobile device connected to the Internet? Yes ☐ No ☐
11. Who taught you how to use computers in the first place?

Trainer		Colleagues	
Family		Friends	
Books		Videos	
Yourself		Other (please specify)	

12. How would you rate your own computer literacy?
    a. Poor c. Adequate
    b. Good d. Excellent
13. How would you rate your own Internet literacy?
    a. Poor c. Adequate
    b. Good d. Excellent
14. How would you rate your current typing skills?
    a. Poor c. Adequate
    b. Good d. Excellent

Section II

Q15. Please indicate your level of comfort when using each of the following by putting a tick (√) in the box at the appropriate spot. If there is any item you do not know, it can be assumed that you do not have any experience with the item.

		Very comfortable	Comfortable	Somewhat comfortable	Not comfortable	Don't use
1	Word processing (e.g. MS Word, Open Office)					
2	E-mail (e.g Gmail, Hotmail, Yahoo)					
3	World Wide Web					
	Web searching (e.g. Google, Yahoo, Bing)					
4	Database (e.g. MS access, Open Office, Google Drive, Thinkfree, Zoho)					

5	Spreadsheets (e.g. MS access, Open Office, Google Drive, Thinkfree, Zoho)					
6	Graphics (e.g. Photoshop, CorelDRAW , Freehand, GIMP)					
7	Multimedia (e.g. Audacity, Moviemaker, Avidemux)					
8	Language software (CD-ROM)					
9	Concordancer					
10	Blogging (e.g. Blogspot, Wordpress)					
11	Wiki					
12	Online discussion group					
13	Text chatting (e.g. Yahoo Messenger, Gtalk, Facebook Messenger)					
14	Voice chatting (E.g. Skype, Viper)					
15	Video conferencing (Skype)					
16	Computer games					

Q16. How would you rate your computer skills? Please put a tick (√) in the box at the appropriate spot: 'None', 'Basic', 'Intermediate' or 'Advanced'

		None	Basic	Intermediate	Advanced
1	Word processing applications				
2	Spreadsheet applications				
3	Database applications				
4	Presentation applications				
5	Multimedia applications				
6	Web design applications				
7	Web search engines				
8	Communication applications				

Q17. Please respond to each of the following computer-related questions by putting a tick (√) in the box at the appropriate spot: 'Yes' or 'No'.

		Yes	No
1	Do you have a computer connected to the Internet at home?		
2	Do you have an e-mail account?		
3	Do you check your email regularly?		
4	Do you have social network account?		
5	Do you check your social network account regularly?		
6	Do you access the Internet using a personal computer?		
7	Do you access the Internet using a mobile device such as hand phones or tablets?		
8	Do you have a personal homepage on the Web?		
9	Do you understand the basic functions of computer hardware components?		
10	Do you use keyboard shortcuts?		
11	Do you use a computer connected to the Internet at school?		
12	Do you use a computer for teaching purposes?		
13	Do you find it easy to learn something by reading it from a computer screen?		
14	Do you use CD-ROMs to supplement your learning/teaching?		
15	Do you use Web sites to supplement your learning/teaching?		

Q18. Please respond to each of the following computer-related questions by putting a tick (√) in the box at the appropriate spot: 'Yes' or 'No'.

		Yes	No
1	Can you properly turn on and shut down a computer?		
2	Can you start and exit a computer program?		
3	Can you change monitor brightness and contrast?		
4	Can you minimize, maximize and move windows on the desktop?		
5	Can you perform file management including deleting and renaming files, etc.?		
6	Can you use a 'search' command to locate a file?		
7	Can you install a software program?		
8	Can you scan disks for viruses?		
9	Can you move a file from a hard drive to a USB drive?		
10	Can you write files onto a CD?		
11	Can you resize a photograph?		
12	Can you record and edit sounds?		
13	Can you print a document using a printer?		
14	Can you create a basic Word document?		
15	Can you copy, cut and paste text in a document?		
16	Can you change font style and size in a document?		
17	Can you create a basic Excel Spreadsheet?		
18	Can you create a simple database using Access?		
19	Can you create a simple presentation using PowerPoint?		
20	Can you create a simple Web page?		
21	Can you send and receive attachments through e-mail messages?		
22	Can you search for information online using a Web search engine? (e.g. Google, Yahoo, Bing)		
23	Can you download and save files from the Web (e.g., text, graphic, PDF files)?		
24	Can you use a video conferencing tool on the Web? (e.g. Google Hangouts)		

Q19. The following terms are related to computer knowledge. Put a tick (√) in front of any of them that you do not know without asking others or referring to books.

- ☐ .doc, .pdf, .html, .jpg, .mpeg, .mp3
- ☐ Blog, wiki
- ☐ Forum, threaded discussion
- ☐ Copy, paste, select, save as
- ☐ Document, web page, web site
- ☐ Screenshot, screen capture
- ☐ File, folder, directory
- ☐ Format, layout, paragraph styles, template, default
- ☐ Table, rows, columns
- ☐ Upload, download
- ☐ Synchronous, asynchronous communication
- ☐ Web address, URL, link
- ☐ Thumb drive, flash drive, USB, HDMI
- ☐ The Cloud (Google Drive, Skydrive, Dropbox, iCloud)
- ☐ Search Engine

Section III

Q20. What do you think are the factors affecting the use of computers in the classroom? Please tick (√) TWO boxes that best apply.

Limited access to the Internet		Limited facilities	
Limited time		Limited knowledge of computers	
Lack of computer skills of teachers		Lack of computer skills of students	
Lack of interest of teachers		Lack of interest of students	
Lack of school support		Lack of computer-based materials	
Curricular restriction		Inflexible teaching methods	
Other (please specify)			

Q21. Please indicate the extent to which you agree or disagree with the following ideas expressed by putting a tick (√) in the box at the appropriate spot: 'Strongly agree', 'Agree', 'Uncertain', 'Disagree' or 'Strongly Disagree'.

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1	I enjoy using computers.					
2	I feel comfortable using computers.					
3	I am willing to learn more about computers.					
4	I think that computers are difficult to use.					
5	I feel threatened when others talk about computers.					
6	I believe that it is important for me to learn how to use computers.					
7	I would like to use computers in the classroom.					
8	I think that my teaching can be improved by using computers.					
9	I think that computers can make second/foreign language learning interesting.					
10	I believe that training in computer-assisted language learning should be included in language teacher education programs.					

Section IV

Q22. Please respond to each of the following online-learning-experience questions by putting a tick (√) in the box at the appropriate spot: 'Yes' or 'No'

No	Questions	Yes	No
1	Do you have online learning/training experience (OLT)? (if you answer no skip question 22 and go to Q.33)		

2	Do you schedule specific time for the OLT?		
3	Have you ever missed a session or topic in OLT?		
4	Have you ever experienced difficulties in online learning?		
5	Have you ever experienced the following difficulties during OLT:		
	a. Internet connection problem		
	b. software compatibility		
	c. hardware issues		
	d. unclear materials		
	e. explanation or questions		
6	Do you contact the following people for help with your OLT problems?		
	a. Peer students		
	b. Tutors		
	c. ICT support		
	d. Others (please specify):……		
7	Which of the following people often give you help?		
	a. Peer students		
	b. Tutors		
	c. ICT support		
	d. Others (please specify):……		
8	Did you post questions online to get answers for your problem?		
9	Did you get answers from others online?		
10	What other problems have you encountered during OLT? (Please specify)		

Section V

Q33. The following statements are various reasons that possibly motivate people to do online learning. Please tick (√) the ones that are relevant to your situations.

1	Because I can study at anytime and anywhere as long as there is Internet access	
2	It is always available whenever needed; lectures, discussion, explanation, and comments are just clicks away	
3	Because I can control the study time	
4	I can pause my study at any time I want and continue it later	
5	There is chance for interaction	
6	Because instructors can be more approachable in online settings	
7	Because it reduces anxiety	
8	More time available to absorb the study material	
9	It saves money and time especially because of travelling reasons	
10	No more expensive textbooks	
11	I don't have to leave my job (if you already work)	
	Other reasons (Explain):	

Appendix C: Post Training Questionaire

Post Training Questionnaire

No	Statements	Yes	No
1	I know what to do when using computers for EFL teaching.		
2	I am aware of the opportunities that computers offer.		
3	I can answer any question about how to use computers for language instructions.		
4	I know where to find online EFL learning resources		
5	I am still not confident in using computers for EFL teaching.		
6	I believe that I know how to use collaborative spaces like blogs and wikis for EFL teaching		
7	I believe that teaching and learning should not be limited by time and distance		
8	I know now how to learn and work collaboratively online		
9	I am confident that I can use email, online chat, and forums for communication with colleagues and my students		
10	I think that technology enhances teaching and that it makes learning more effective.		
11	I think I can motivate students to learn EFL by using technology.		
12	I think the use of technology provides easy access to authentic materials for language teaching/learning.		
13	I think preparing learning materials (e.g. worksheets and handouts) by using technology is a lot easier for me now		
14	I am confident to support my students with technology-supported learning		
15	I think I can use technology to accommodate different learning styles of the students.		
16	I believe that learning using technology is not limited by time and space.		
17	I highly recommend teachers to use technology in their language teaching.		
18	I think that technology provides easy access to communicative activities for EFL learners.		
19	I believe that teacher professional development can be continuously carried online		
20	I am confident to participate in an online ELT (English language teaching) forum		
21	I know where to find resources for my continuous professional development		
22	I am aware of the needs to respect others intellectual properties		
23	I am aware that respect should be well maintained in successful online communication		
24	I know now how to make use of technologies to manage the classroom		
25	I am more aware of the need to carefully select information on the Internet		
26	I can now systematically organize information using various tools such as a mind mapping tool.		
27	I know now where to get help online and find resources for helping to solve teaching problems (search engines, YouTube, online forums, e-groups etc.)		

Appendix D: Observation Guide

Observation Guide

The observation attempts to get a comprehensive view of the process of OTT. The aims of the observation are to become familiar with the process of online teacher training and to directly identify factors affecting the process of online teacher training.

	Things to observe	Note
Support	The availability of • Technicians • Skilled operators and esigners for the OT portal/web • Technical support • Manual/tutorials for the OT? • policies supporting the OT	
	Occurrence of social learning	
	Training for administrators	
	Administrators' perception towards OT	
	Training for instructors	
	Instructors' perceptions towards OT	
	Ease of contact with instructors and administrators	
	Interaction among trainers and trainees or trainees and trainees	
Technology	Compatibility of the available online materials with all types of devices and operating systems used by the learners	
	E-learning website navigation	
	Trainees' and instructors' preferred media for communication, social network or web portals	
Course	Types of materials used (text, sound, video, animation etc.)	
	Instructional design	
	Continuous evaluation	
	Materials contextualization	
	Variation of activities	
	Time allocation for task completion	
	Self-made materials or using the already available mats on the net	
Learners	Amount of participation in the discussions between male and female learners	
	Academic background	
	Time patterns by the trainees to post on the OT sessions	

	Things to observe	Note
	Adequate participation	
	The trainees' procrastination	
	Learners' collaboration	
Instructors	Amount of posting	
	Initiating interactions	
	Asking questions	
	Feedback giving	